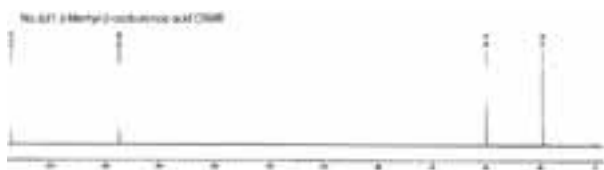


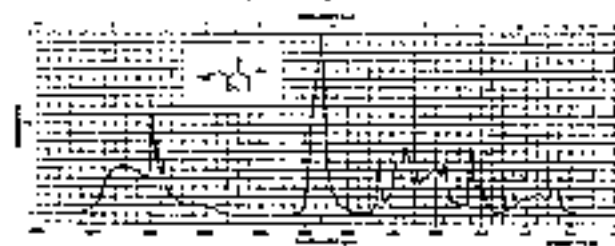
Spectra of certain flavouring agents

631 3-Methyl-2-oxobutanoic acid (13C-NMR)

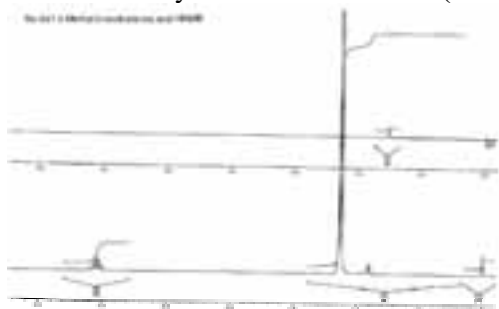


632 3-Methyl-2-oxopentanoic acid (IR)

632 3-Methyl-2-oxopentanoic acid



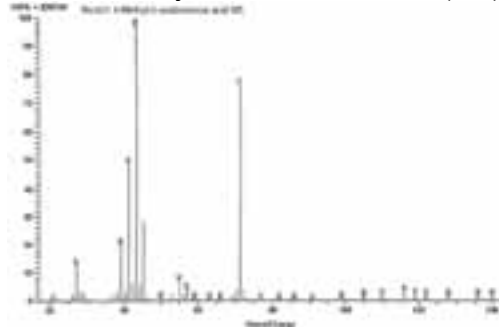
631 3-Methyl-2-oxobutanoic acid (1H-NMR)



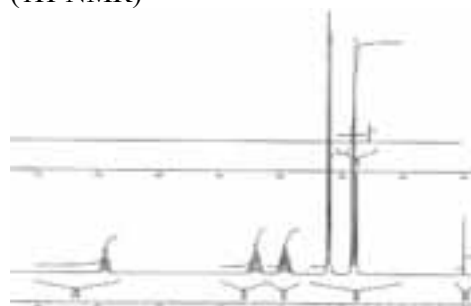
632.1 3-Methyl-2-oxopentanoic acid, sodium salt (13C-NMR)



631 3-Methyl-2-oxobutanoic acid (MS)



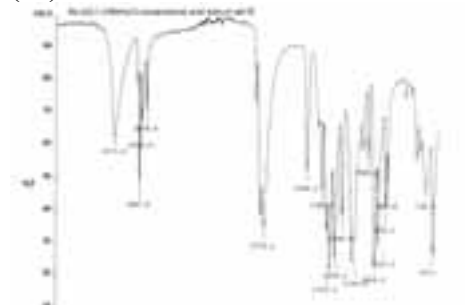
632.1 3-Methyl-2-oxopentanoic acid, sodium salt (1H-NMR)



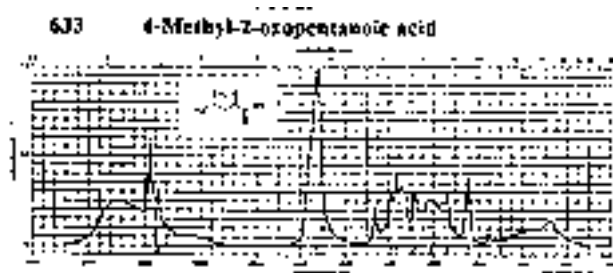
631.1 3-Methyl-2-oxobutanoic acid, sodium salt (1H-NMR)



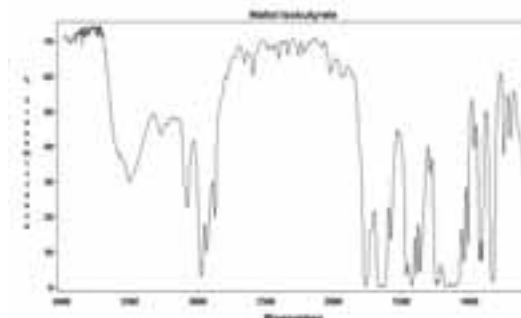
632.1 3-Methyl-2-oxopentanoic acid, sodium salt (IR)



633 4-Methyl-2-oxopentanoic acid (IR)



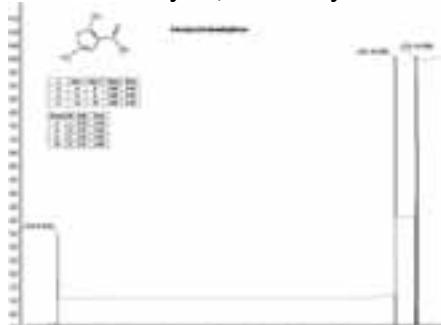
1482 Maltyl isobutyrate



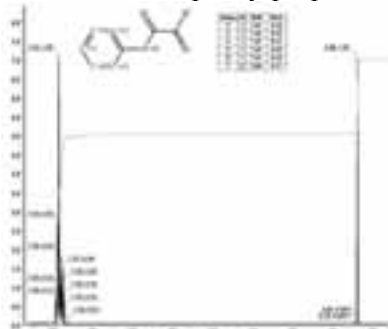
633.1 4-Methyl-2-oxopentanoic acid, sodium salt (1H-NMR)



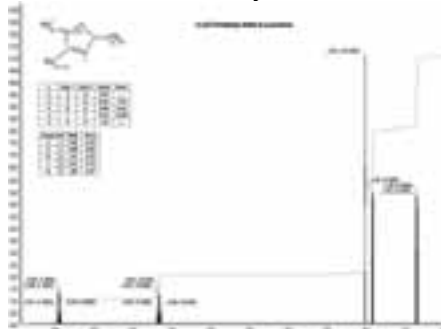
1506 3-Acetyl-2,5-dimethylfuran



1479 2-Oxo-3-phenylpropionic acid, sodium salt



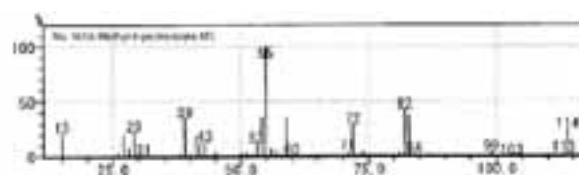
1559 2,4,5-Trimethyl-delta-oxazoline



1480 Maltol



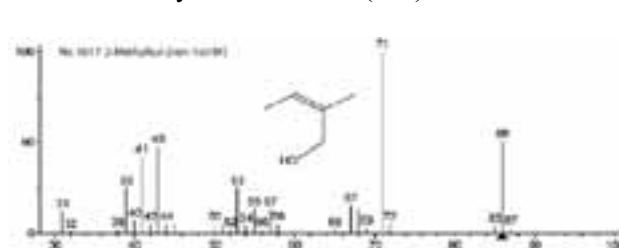
1616 Methyl 4-pentenoate (MS)



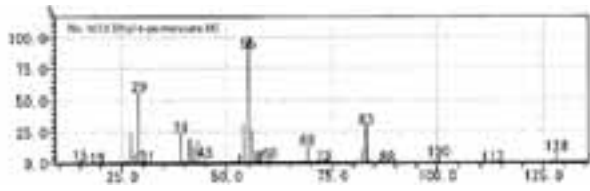
1481 Ethyl maltol



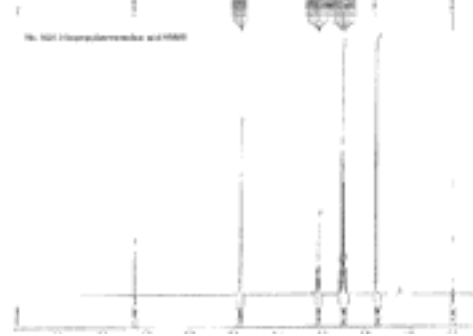
1617 2-Methylbut-2-en-1-ol (MS)



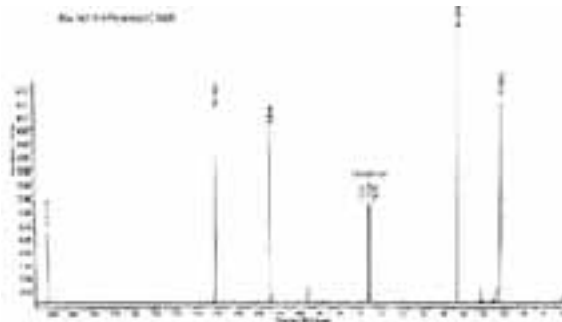
1618 Ethyl 4-pentenoate (MS)



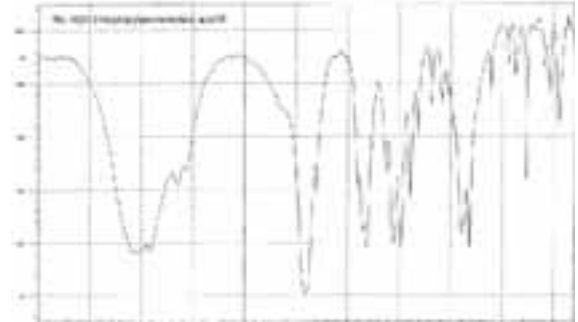
1620 3-Isopropenylpentanedioic acid (1H-NMR)



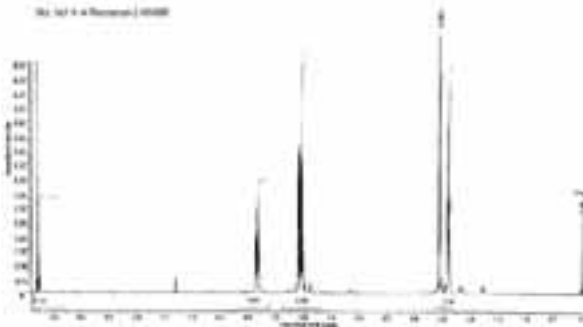
1619 4-Pentenal (13C-NMR)



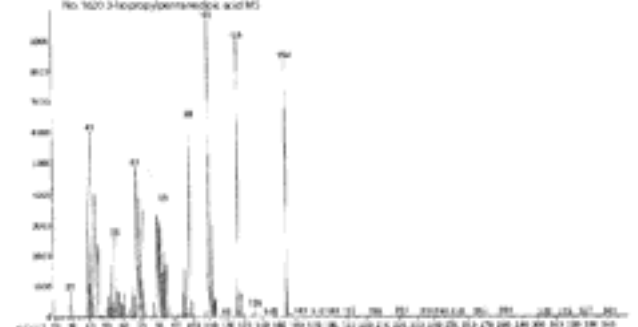
1620 3-Isopropenylpentanedioic acid (IR)



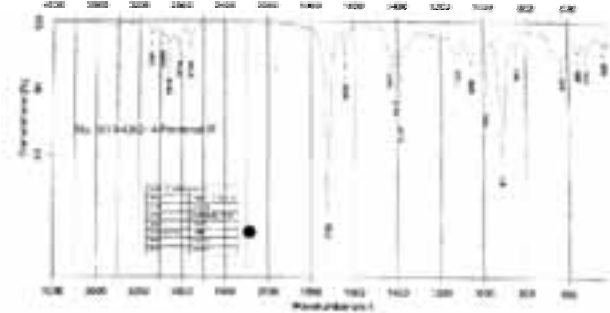
1619 4-Pentenal (1H-NMR)



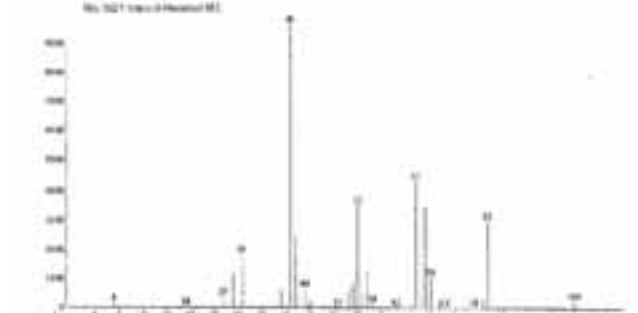
1620 3-Isopropenylpentanedioic acid (MS)



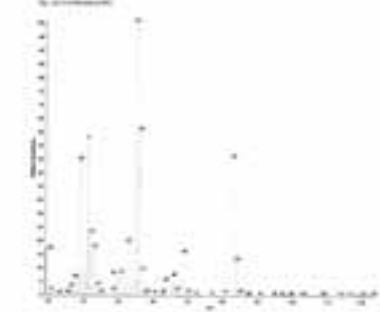
1619 4-Pentenal (IR)



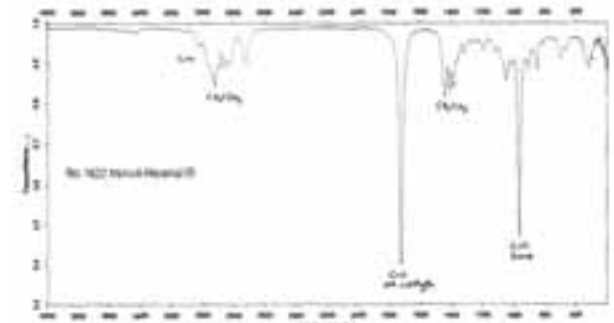
1621 trans-3-Hexenol (MS)



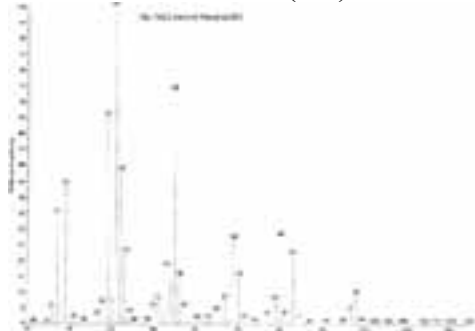
1619 4-Pentenal (MS)



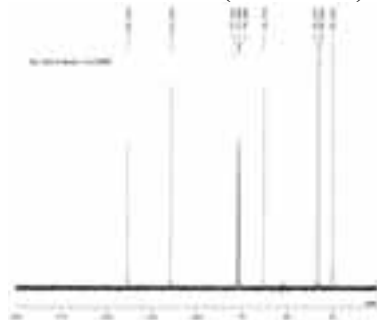
1622 trans-4-Hexenal (IR)



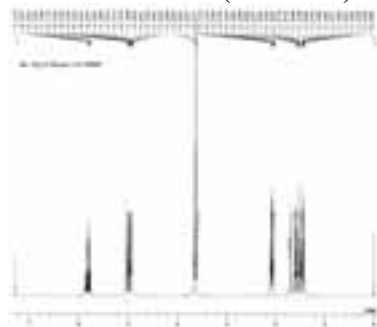
1622 trans-4-Hexenal (MS)



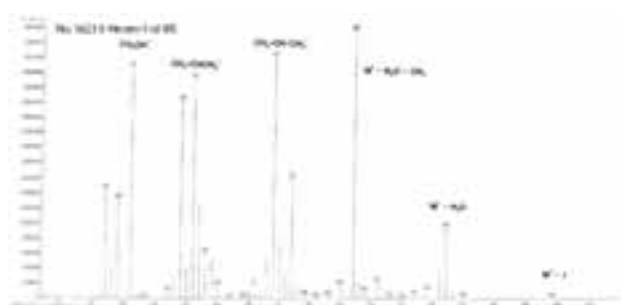
1623 5-Hexenol (13C-NMR)



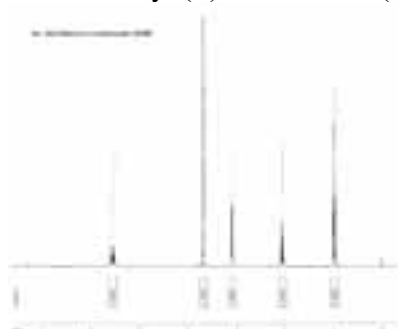
1623 5-Hexenol (1H-NMR)



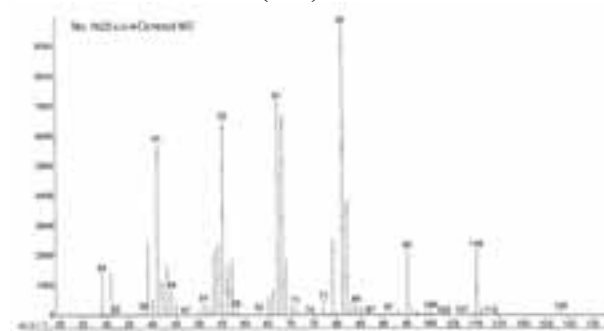
1623 5-Hexenol (MS)



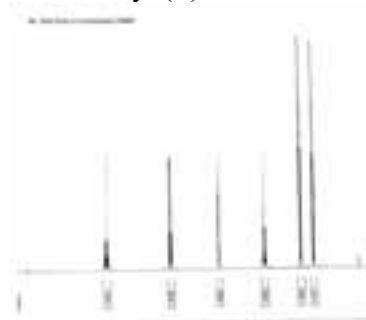
1624 Methyl (Z)-3-hexenoate (1H-NMR)



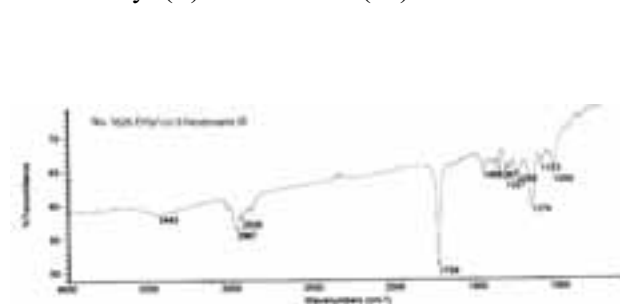
1625 cis-4-Octenol (MS)



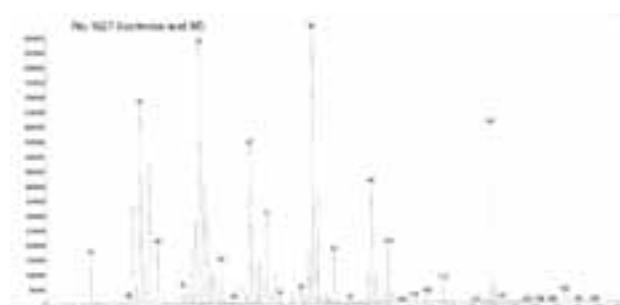
1626 Ethyl (Z)-3-hexenoate (1H-NMR)



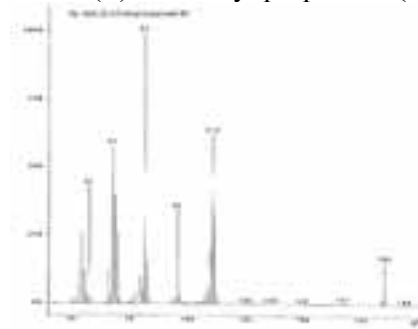
1626 Ethyl (Z)-3-hexenoate (IR)



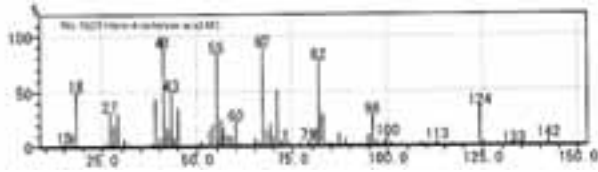
1627 3-Octenoic acid (MS)



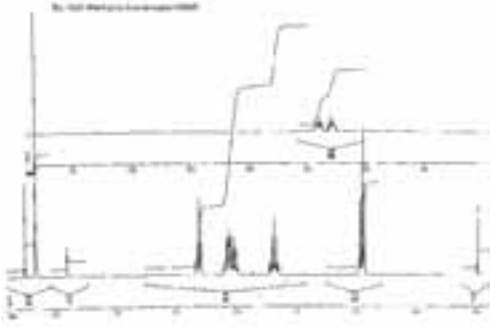
1628 (Z)-3-Octenyl propionate (MS)



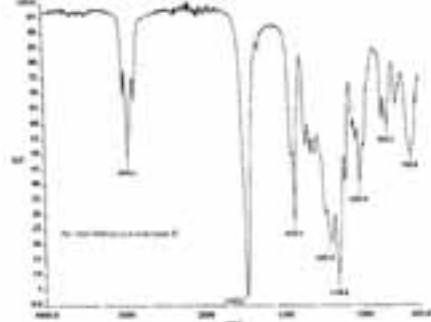
1629 trans-4-Octenoic acid (MS)



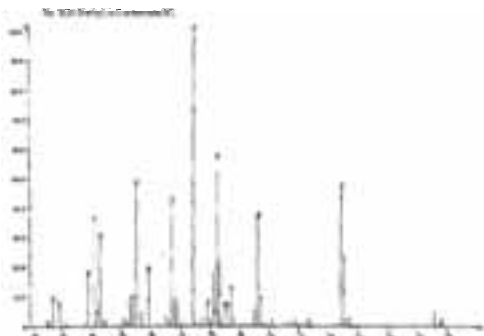
1630 Methyl (Z)-5-octenoate (1H-NMR)



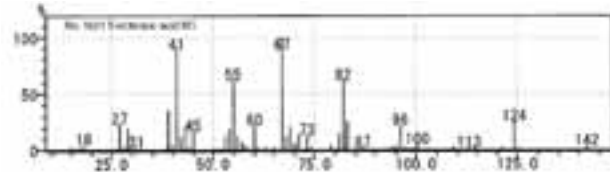
1630 Methyl (Z)-5-octenoate (IR)



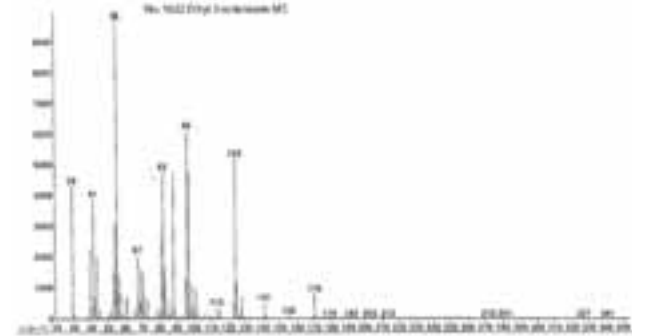
1630 Methyl (Z)-5-octenoate (MS)



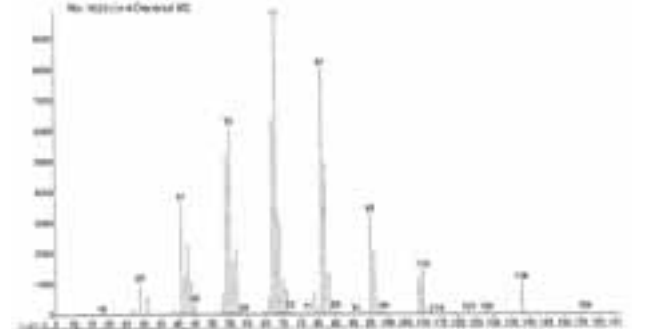
1631 cis-5-Octenoic acid (MS)



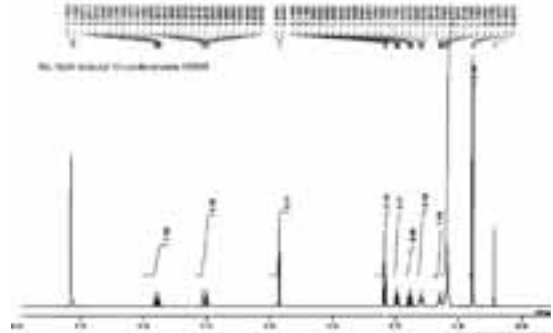
1632 Ethyl 3-octenoate (MS)



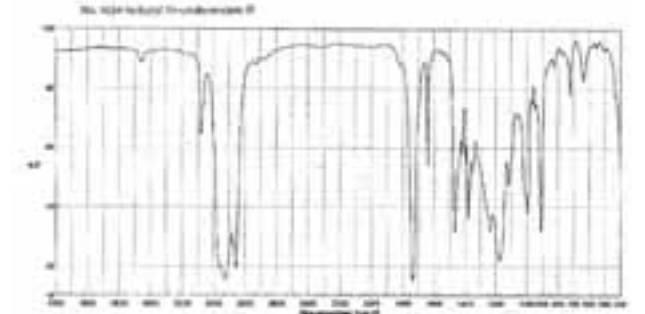
1633 cis-4-Decenol (MS)



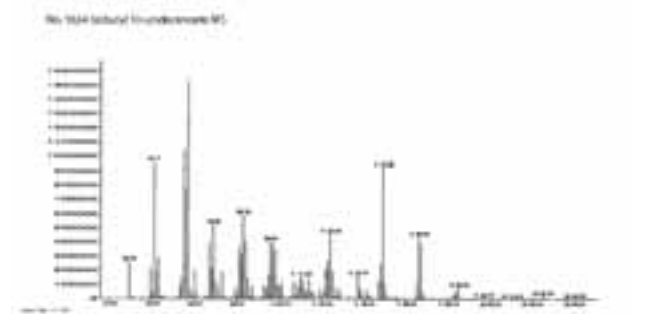
1634 Isobutyl 10-undecenoate (1H-NMR)



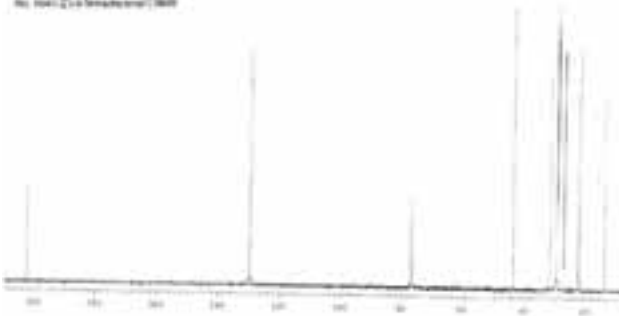
1634 Isobutyl 10-undecenoate (IR)



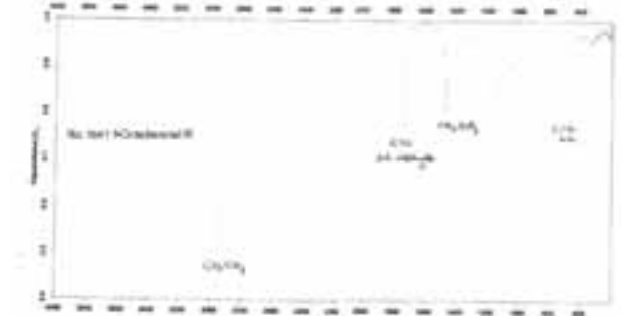
1634 Isobutyl 10-undecenoate (MS)



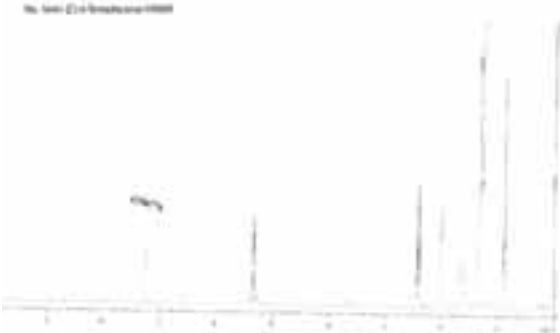
1640 (Z)-8-Tetradecenal (13C-NMR)



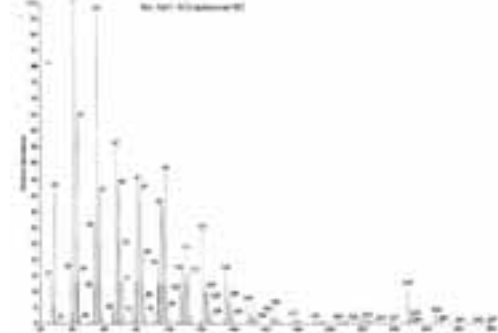
1641 9-Octadecenal (IR)



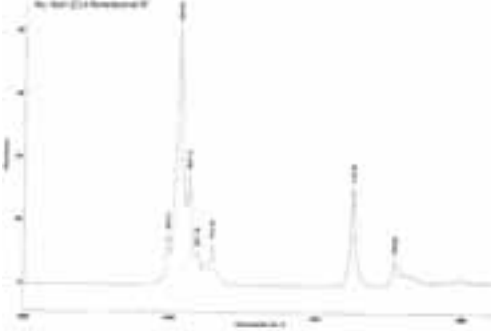
1640 (Z)-8-Tetradecenal (1H-NMR)



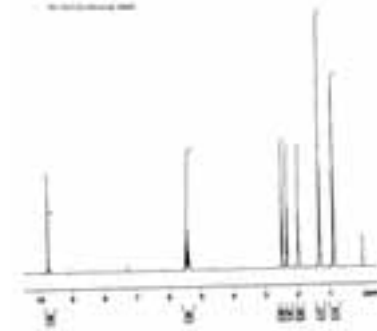
1641 9-Octadecenal (MS)



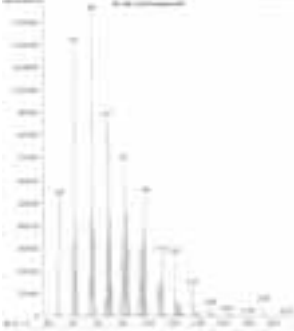
1640 (Z)-8-Tetradecenal (IR)



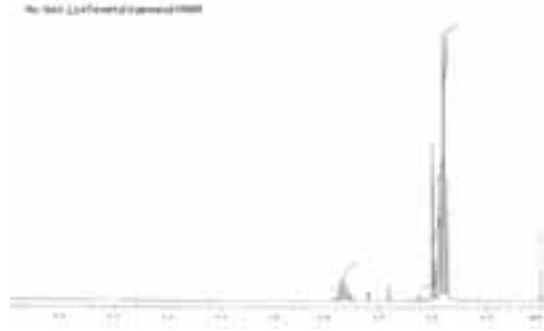
1642 (E)-4-Nonenal (1H-NMR)



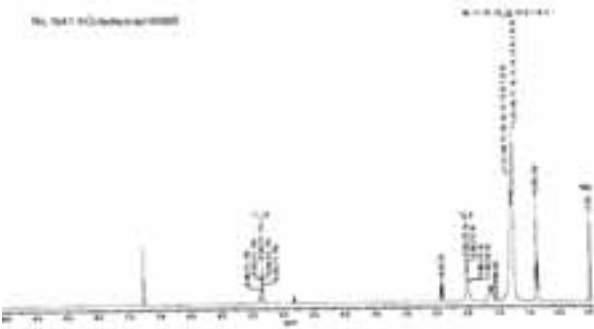
1640 (Z)-8-Tetradecenal (MS)



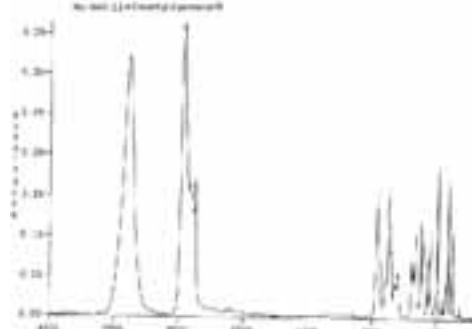
1643 2,3,4-Trimethyl-3-pentanol (1H-NMR)



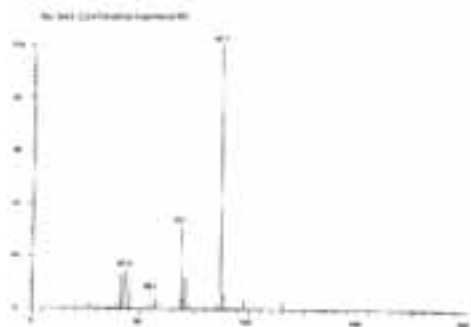
1641 9-Octadecenal (1H-NMR)



1643 2,3,4-Trimethyl-3-pentanol (IR)



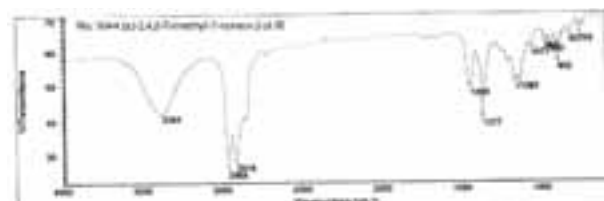
1643 2,3,4-Trimethyl-3-pentanol (MS)



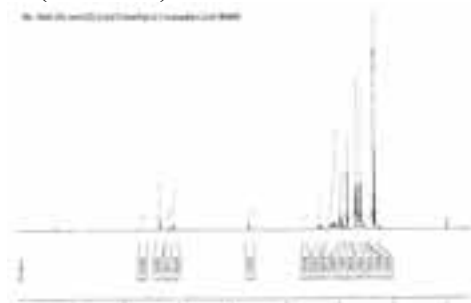
1644 (+/-)-2,4,8-Trimethyl-7-nonen-2-ol (1H-NMR)



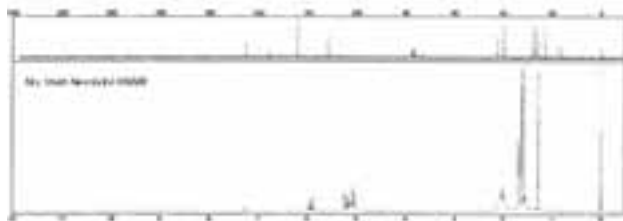
1644 (+/-)-2,4,8-Trimethyl-7-nonen-2-ol (IR)



1645 (E)- and (Z)-2,4,8-Trimethyl-3,7-nonadien-2-ol (1H-NMR)



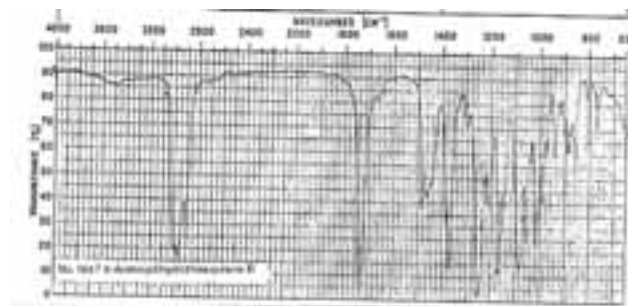
1646 Nerolidol (1H-NMR)



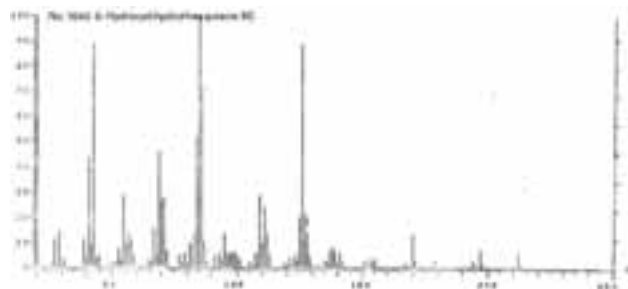
1647 6-Acetoxydihydrotheaspirane (1H-NMR)



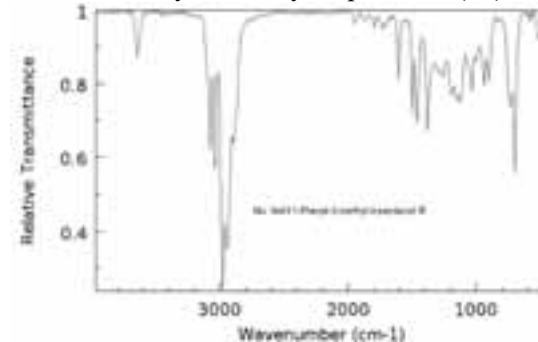
1647 6-Acetoxydihydrotheaspirane (IR)



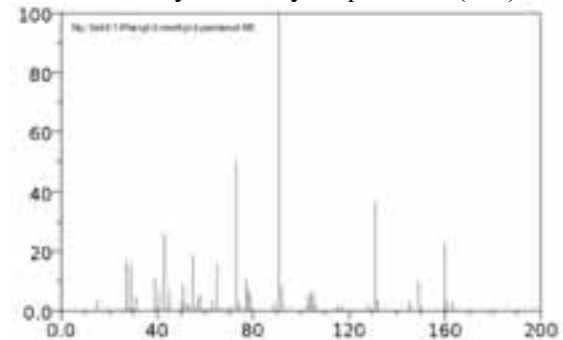
1648 6-Hydroxydihydrotheaspirane (MS)



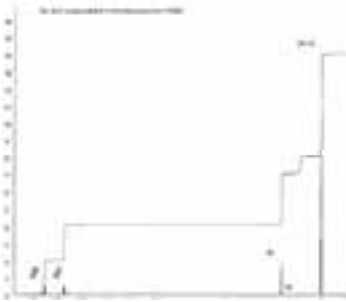
1649 1-Phenyl-3-methyl-3-pentanol (IR)



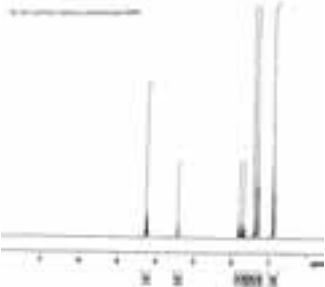
1649 1-Phenyl-3-methyl-3-pentanol (MS)



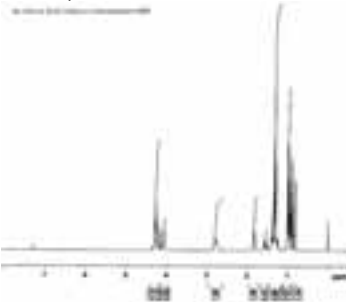
1650 p-alpha,alpha-Trimethylbenzyl alcohol (1H-NMR)



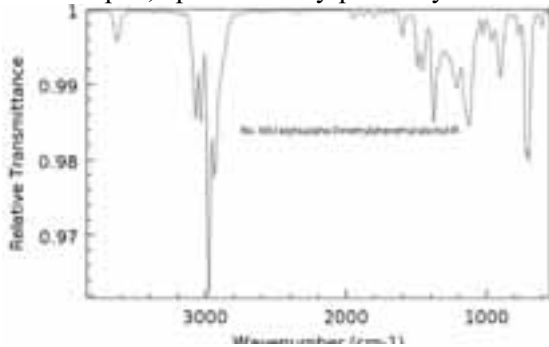
1651 (+/-)-Ethyl 2-hydroxy-2-methylbutyrate (1H-NMR)



1652 (+/-)-Ethyl 2-hydroxy-3-methylvalerate (1H-NMR)



1653 alpha,alpha-Dimethylphenethyl alcohol (IR)



1653 alpha,alpha-Dimethylphenethyl alcohol (NMR)



1654 alpha,alpha-Dimethylphenethyl formate (1H-NMR)



1655 alpha,alpha-Dimethylphenethyl acetate (1H-NMR)



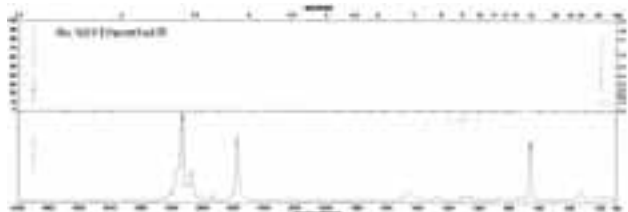
1656 alpha,alpha-Dimethylphenethyl butyrate (1H-NMR)



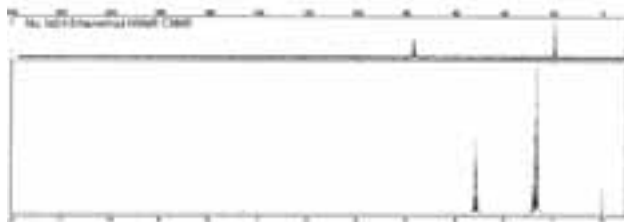
1657 alpha,alpha-Dimethylbenzyl isobutyrate (1H-NMR)



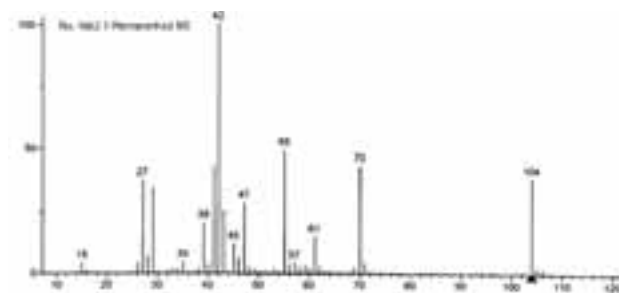
1659 Ethanethiol (IR)



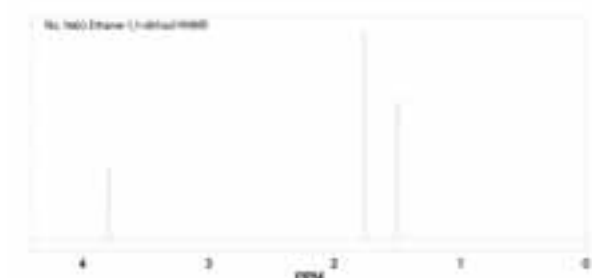
1659 Ethanethiol (NMR)



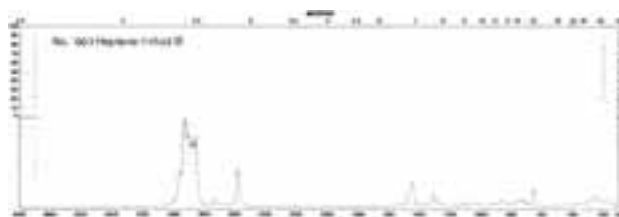
1662 1-Pentanethiol (MS)



1660 Ethane-1,1-dithiol (1H-NMR)



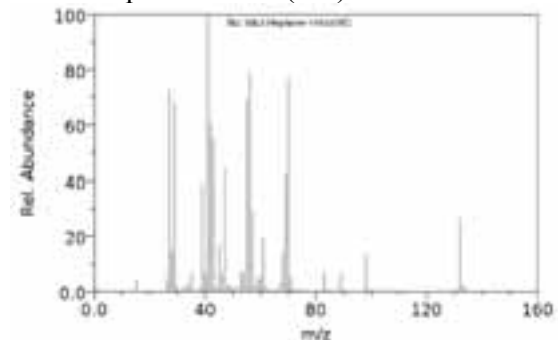
1663 Heptane-1-thiol (IR)



1661 Dimercaptomethane (1H-NMR)



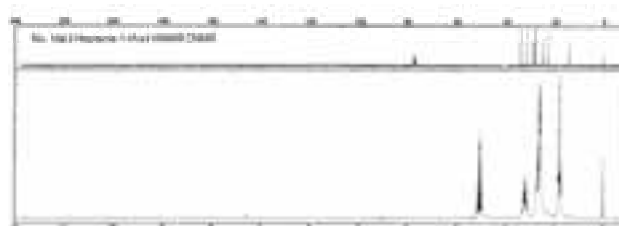
1663 Heptane-1-thiol (MS)



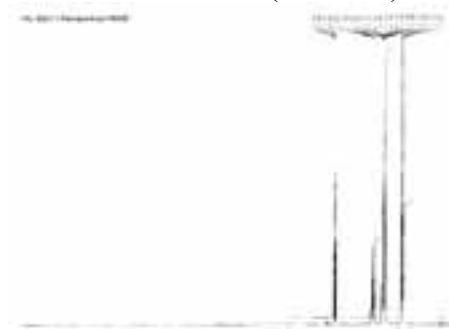
1662 1-Pentanethiol (13C-NMR)



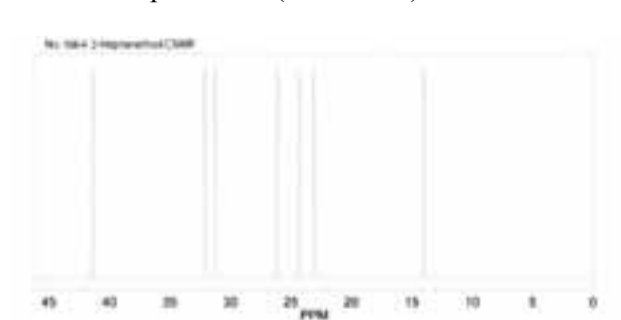
1663 Heptane-1-thiol (NMR)



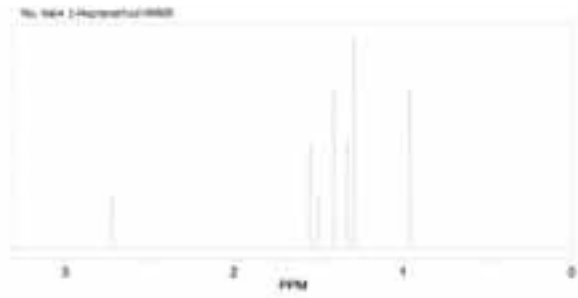
1662 1-Pentanethiol (1H-NMR)



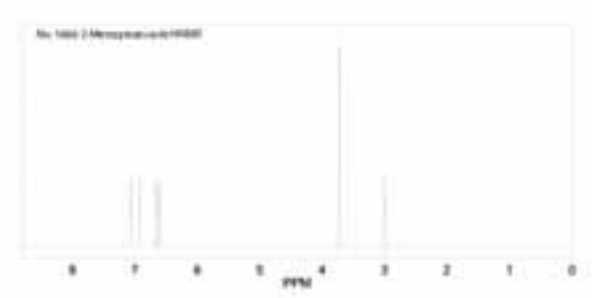
1664 2-Heptanethiol (13C-NMR)



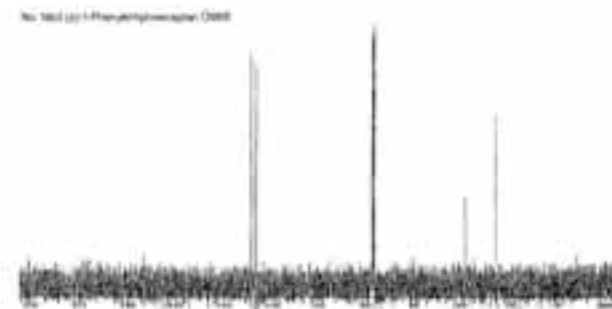
1664 2-Heptanethiol (1H-NMR)



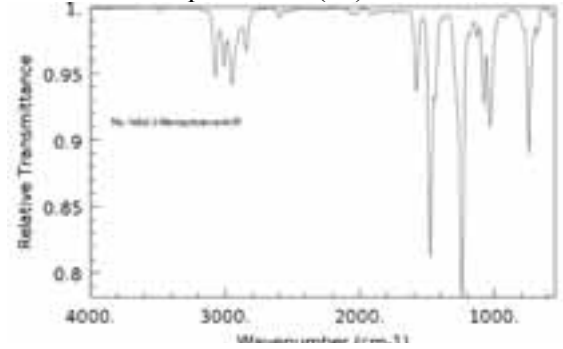
1666 2-Mercaptoanisole (1H-NMR)



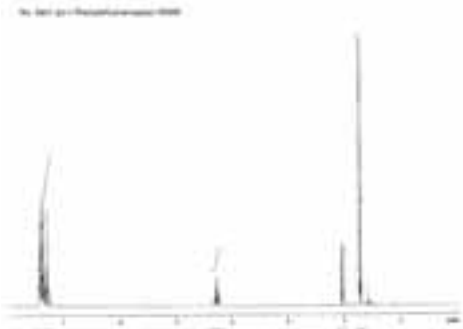
1665 (+/-)-1-Phenylethylmercaptan (13C-NMR)



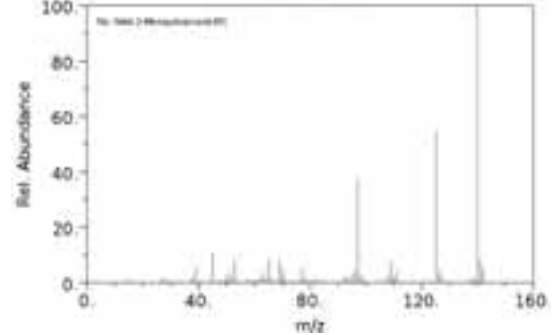
1666 2-Mercaptoanisole (IR)



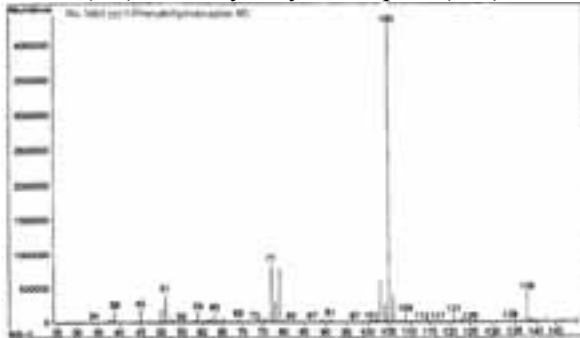
1665 (+/-)-1-Phenylethylmercaptan (1H-NMR)



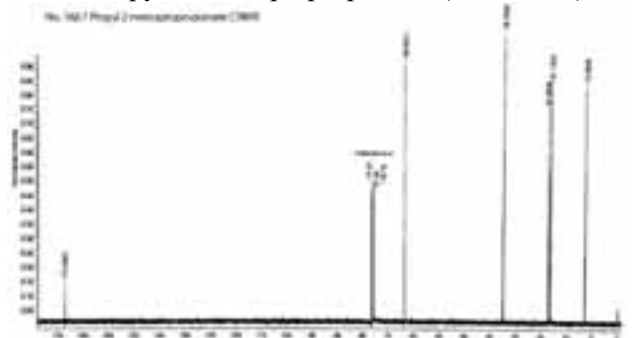
1666 2-Mercaptoanisole (MS)



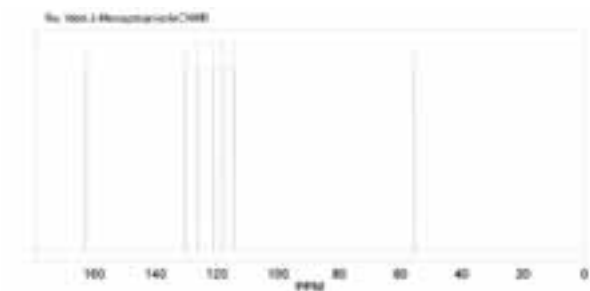
1665 (+/-)-1-Phenylethylmercaptan (MS)



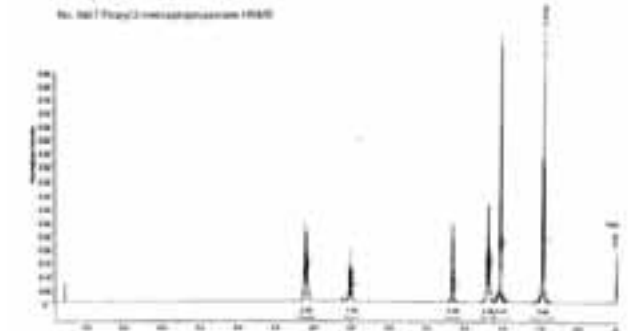
1667 Propyl 2-mercaptopropionate (13C-NMR)



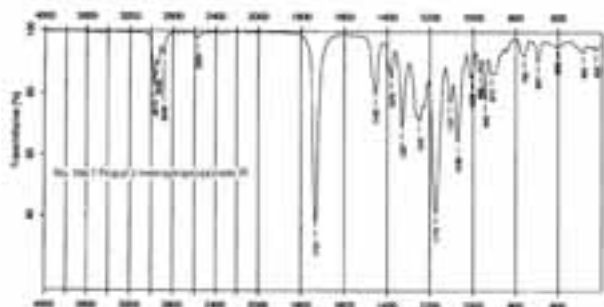
1666 2-Mercaptoanisole (13C-NMR)



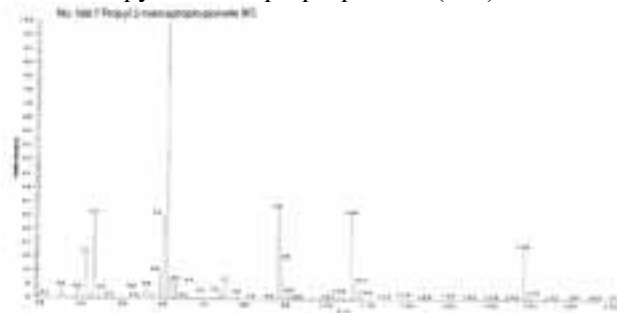
1667 Propyl 2-mercaptopropionate (1H-NMR)



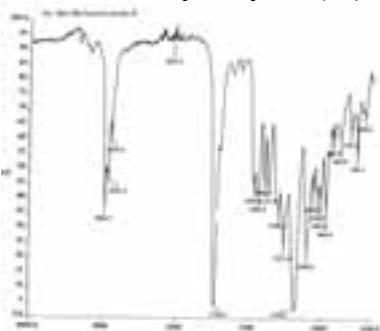
1667 Propyl 2-mercaptopropionate (IR)



1667 Propyl 2-mercaptopropionate (MS)



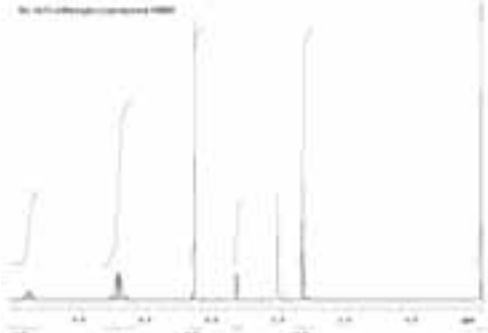
1668 Methionyl butyrate (IR)



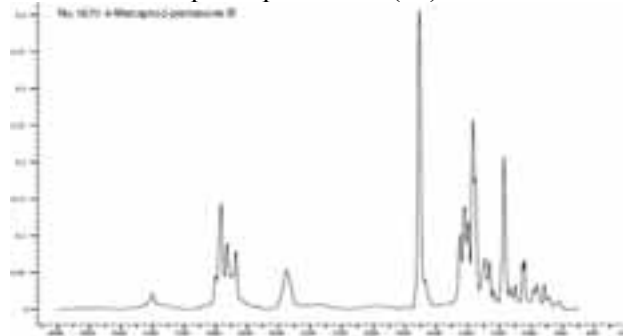
1669 (+/-)-4-Mercapto-4-methyl-2-pentanol (1H-NMR)



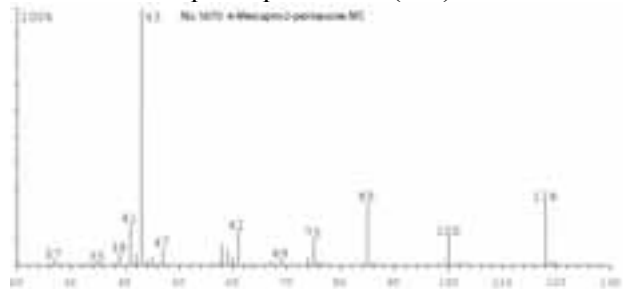
1670 4-Mercapto-2-pentanone (1H-NMR)



1670 4-Mercapto-2-pentanone (IR)



1670 4-Mercapto-2-pentanone (MS)



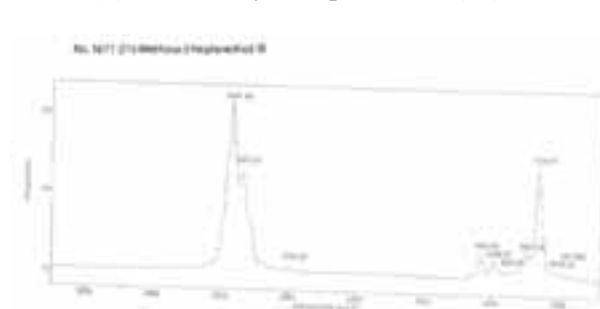
1671 (S)-1-Methoxy-3-heptanethiol (13C-NMR)



1671 (S)-1-Methoxy-3-heptanethiol (1H-NMR)



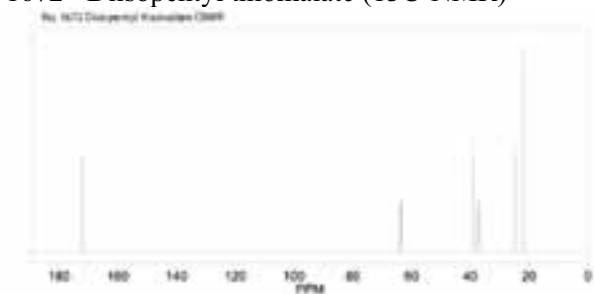
1671 (S)-1-Methoxy-3-heptanethiol (IR)



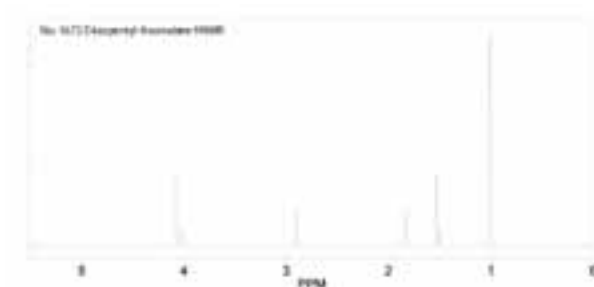
1671 (S)-1-Methoxy-3-heptanethiol (MS)



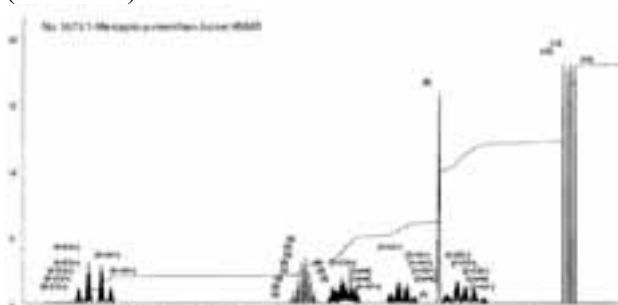
1672 Diisopentyl thiomalate (13C-NMR)



1672 Diisopentyl thiomalate (1H-NMR)



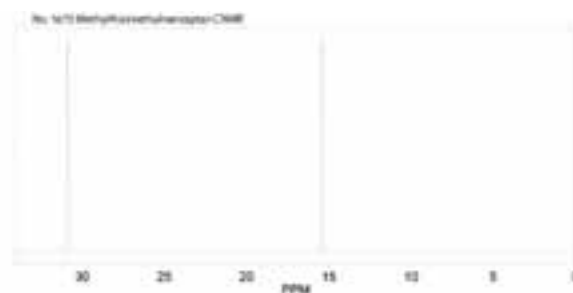
1673 cis- and trans-Mercapto-p-menthan-3-one (1H-NMR)



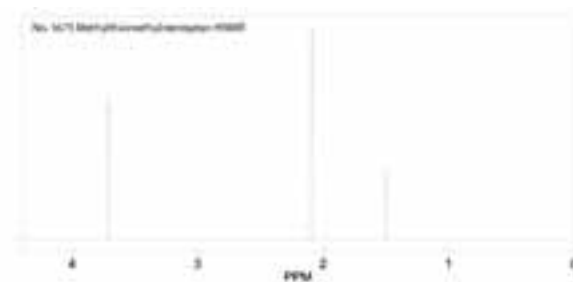
1674 Methyl 3-mercaptopbutanoate (1H-NMR)



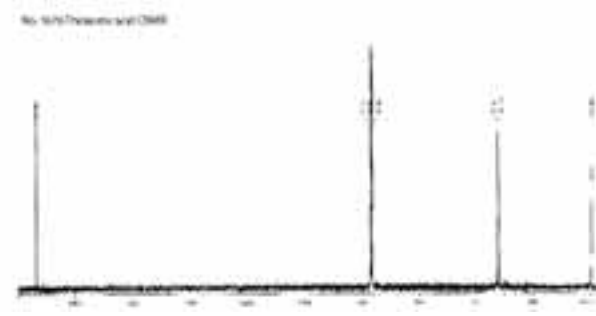
1675 Methylthiomethylmercaptan (13C-NMR)



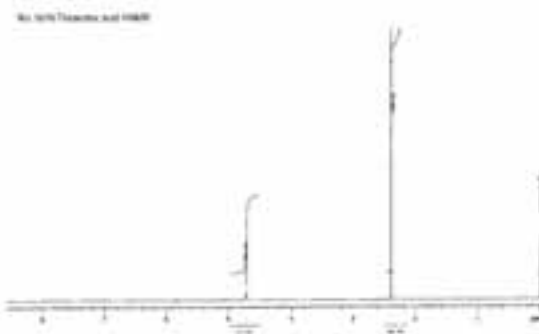
1675 Methylthiomethylmercaptan (1H-NMR)



1676 Thioacetic acid (13C-NMR)



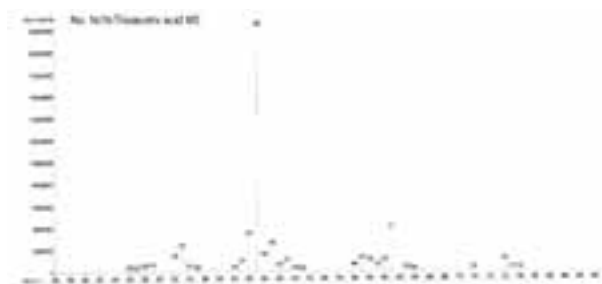
1676 Thioacetic acid (1H-NMR)



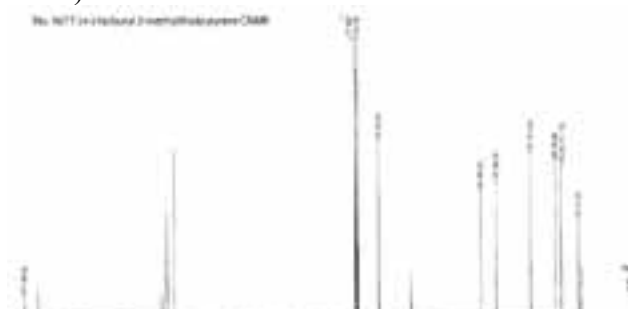
1676 Thioacetic acid (IR)



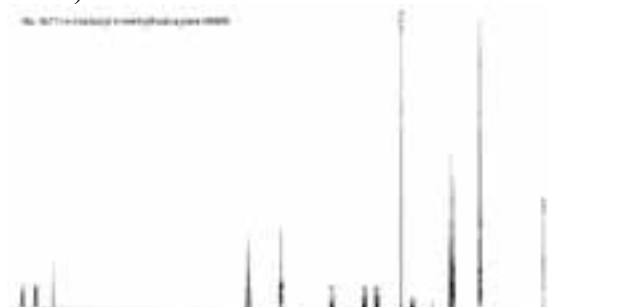
1676 Thioacetic acid (MS)



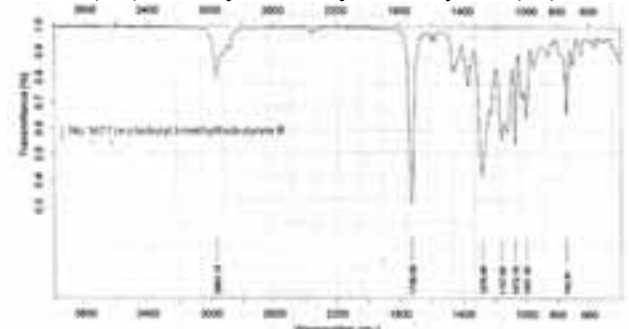
1677 (+/-)-Isobutyl 3-methylthiobutyrate (13C-NMR)



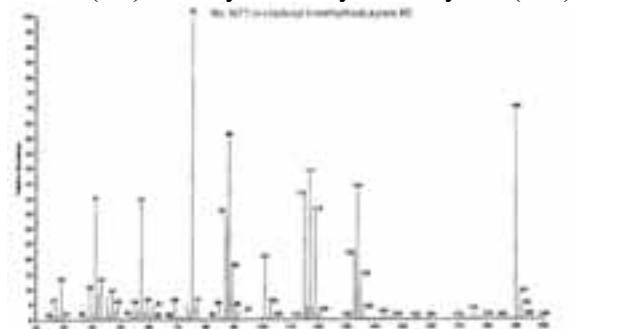
1677 (+/-)-Isobutyl 3-methylthiobutyrate (1H-NMR)



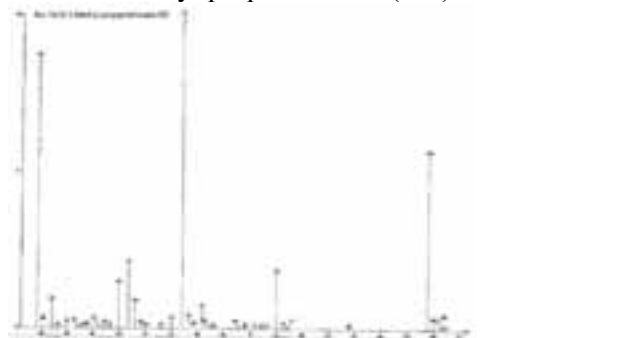
1677 (+/-)-Isobutyl 3-methylthiobutyrate (IR)



1677 (+/-)-Isobutyl 3-methylthiobutyrate (MS)



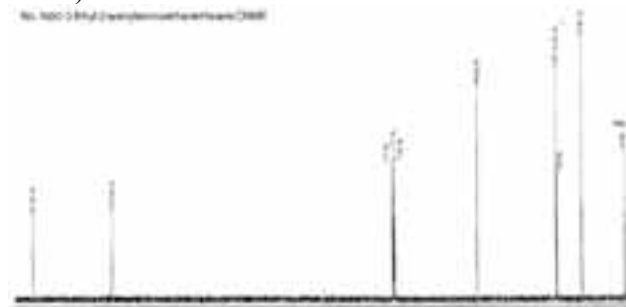
1678 S-Methyl propanethioate (MS)



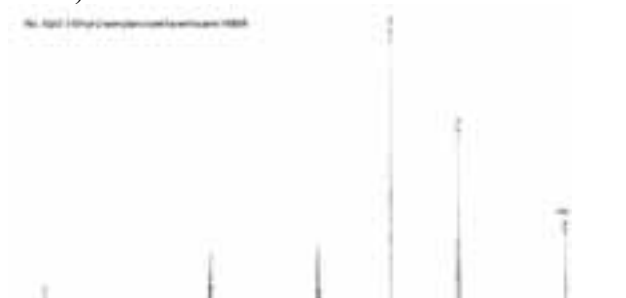
1679 S-Isopropyl 3-methylbut-2-enethioate (1H-NMR)



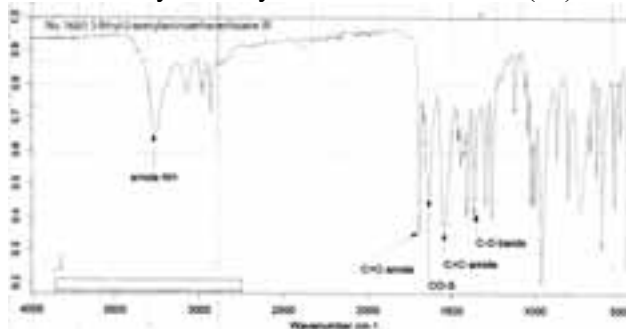
1680 S-Ethyl 2-acetylamino ethanethioate (13C-NMR)



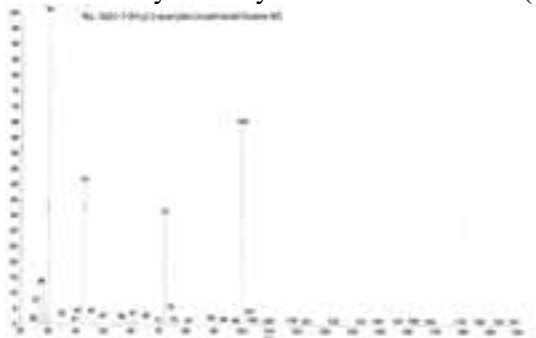
1680 S-Ethyl 2-acetylamino ethanethioate (1H-NMR)



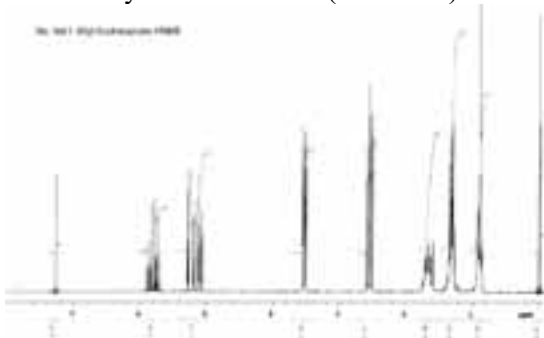
1680 S-Ethyl 2-acetylamino ethanethioate (IR)



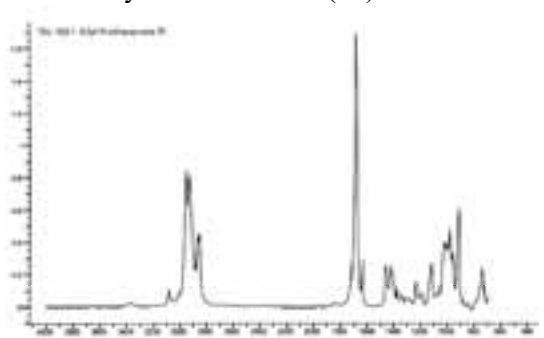
1680 S-Ethyl 2-acetylamino ethanethioate (MS)



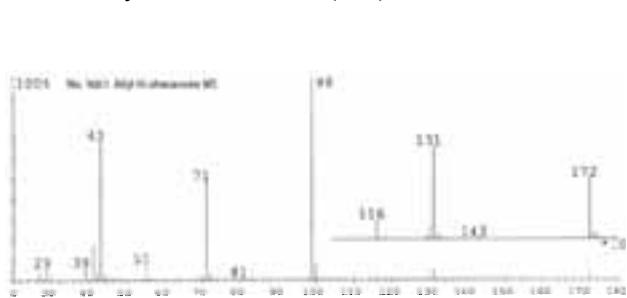
1681 Allyl thiohexanoate (1H-NMR)



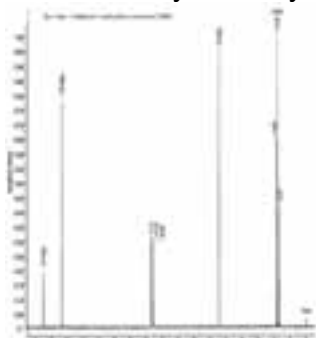
1681 Allyl thiohexanoate (IR)



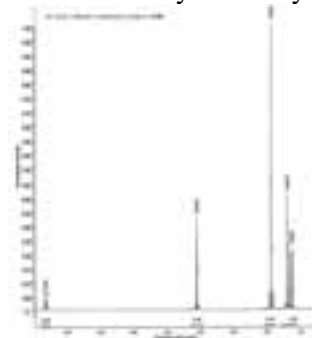
1681 Allyl thiohexanoate (MS)



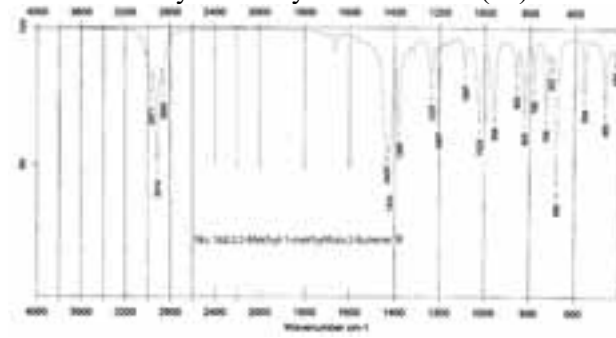
1683 2-Methyl-1-methylthio-2-butene (13C-NMR)



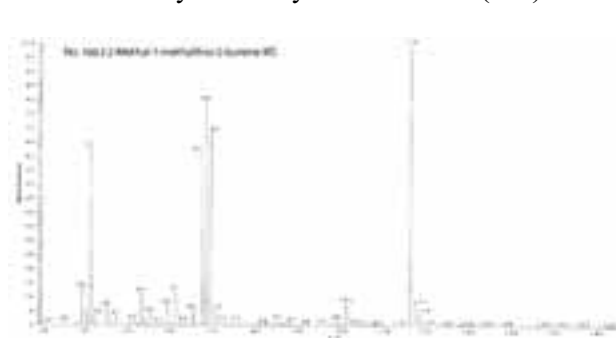
1683 2-Methyl-1-methylthio-2-butene (1H-NMR)



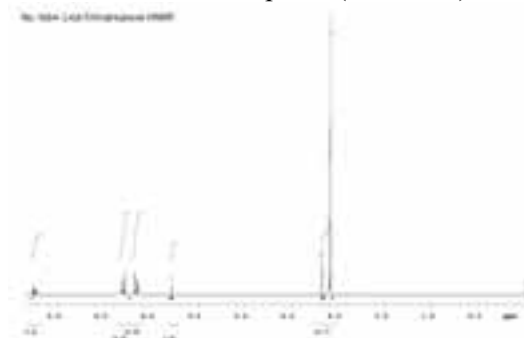
1683 2-Methyl-1-methylthio-2-butene (IR)



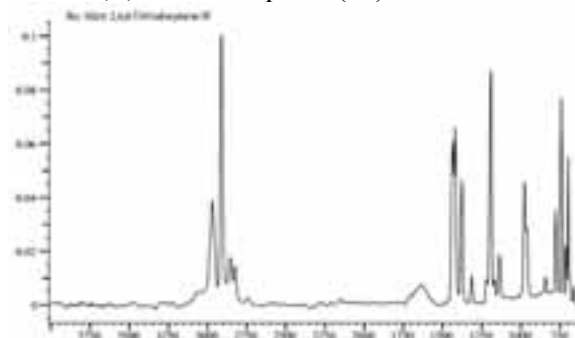
1683 2-Methyl-1-methylthio-2-butene (MS)



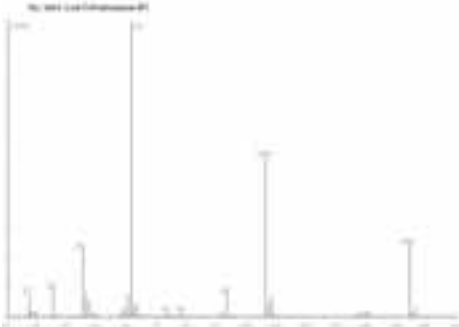
1684 2,4,6-Trithiaheptane (1H-NMR)



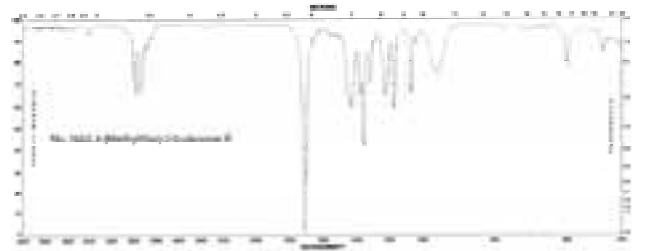
1684 2,4,6-Trithiaheptane (IR)



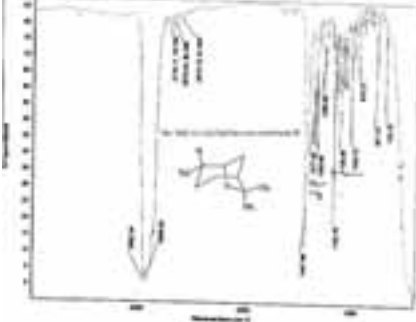
1684 2,4,6-Trithiaheptane (MS)



1688 3-(Methylthio)-2-butanone (IR)



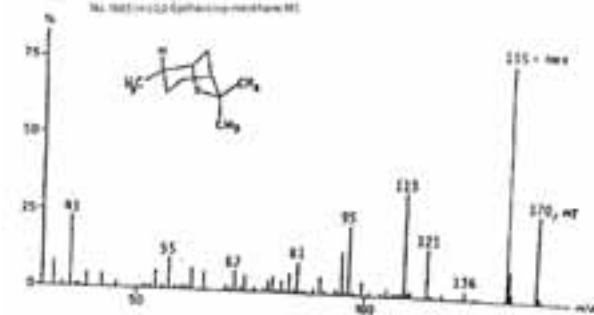
1685 (+/-)-2,8-Epithio-cis-p-menthane (IR)



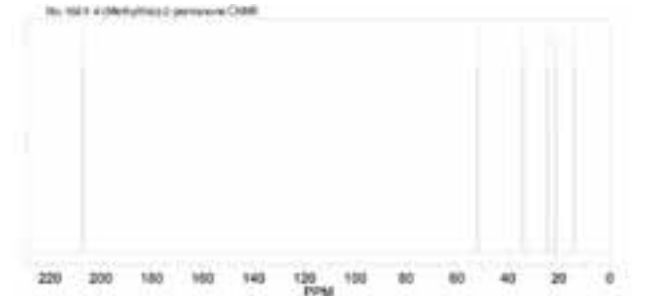
1688 3-(Methylthio)-2-butanone (NMR)



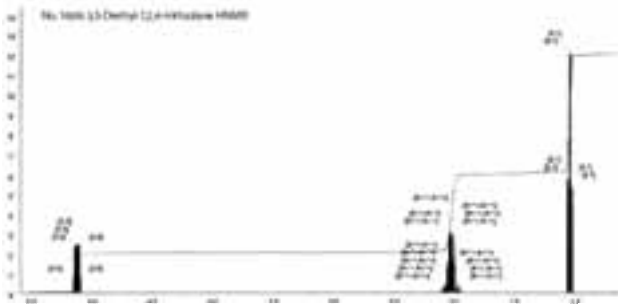
1685 (+/-)-2,8-Epithio-cis-p-menthane (MS)



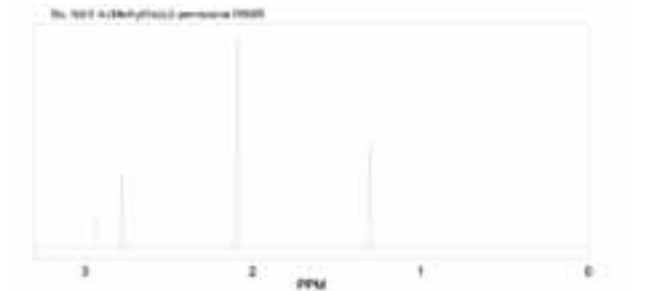
1689 4-(Methylthio)-2-pentanone (13C-NMR)



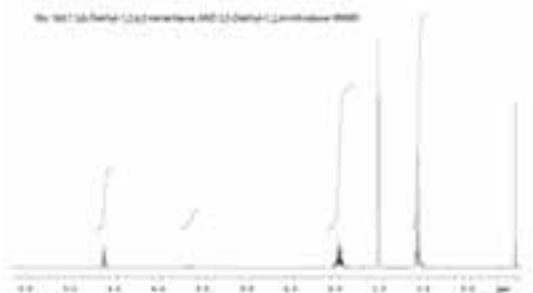
1686 3,5-Diethyl-1,2,4-trithiolane (1H-NMR)



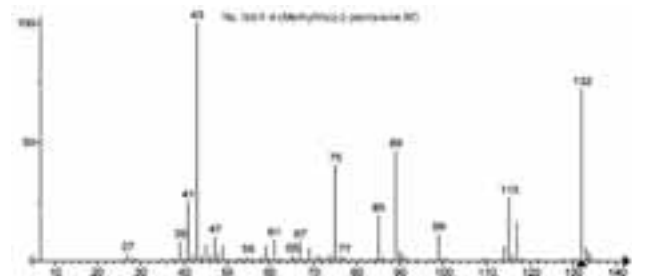
1689 4-(Methylthio)-2-pentanone (1H-NMR)

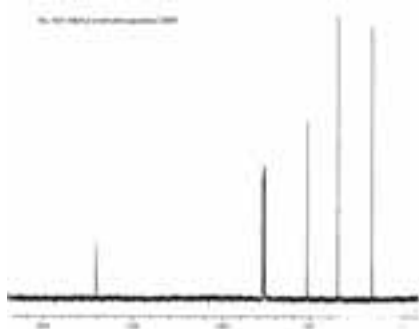
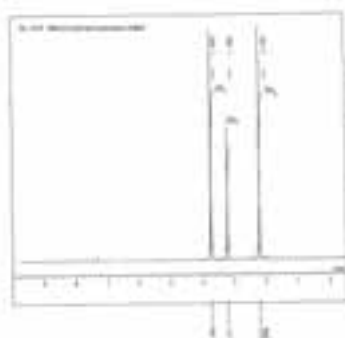


1687 3,6-Diethyl-1,2,4,5-tetrathiane, mixture with 3,5-diethyl-1,2,4-trithiolane (1H-NMR)

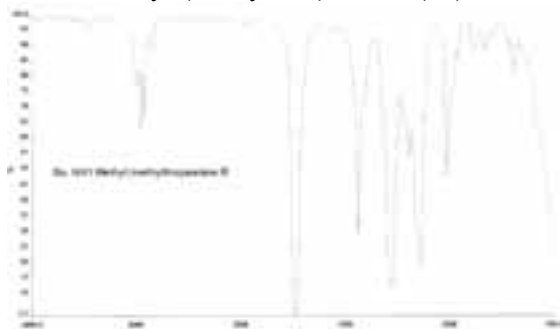


1689 4-(Methylthio)-2-pentanone (MS)

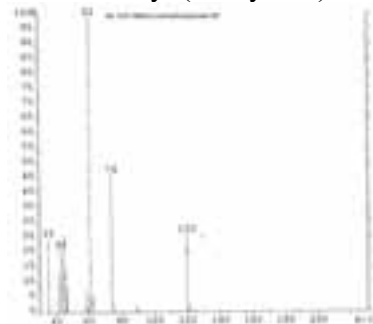
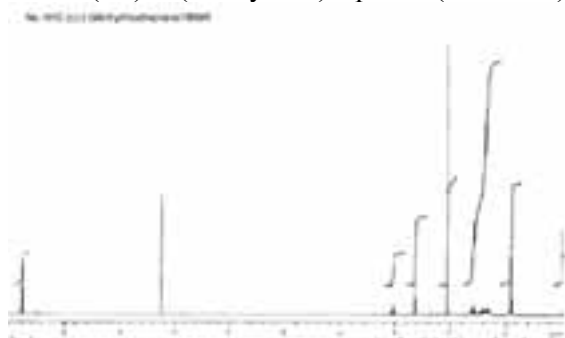


1690 Methyl 3-(methylthio)butanoate ($^1\text{H-NMR}$)1691 Methyl (methylthio)acetate ($^{13}\text{C-NMR}$)1691 Methyl (methylthio)acetate ($^1\text{H-NMR}$)

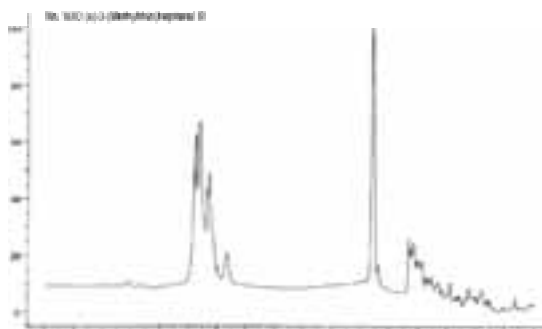
1691 Methyl (methylthio)acetate (IR)



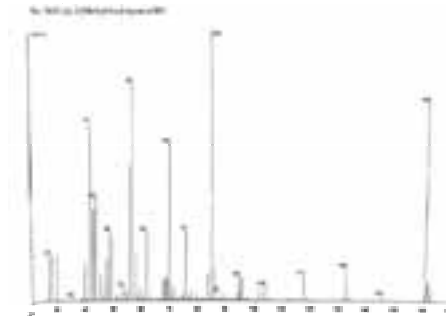
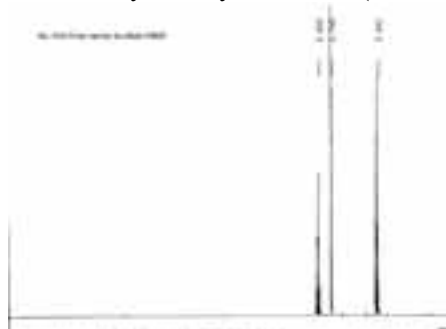
1691 Methyl (methylthio)acetate (MS)

1692 (+/-)-3-(Methylthio)heptanal ($^1\text{H-NMR}$)

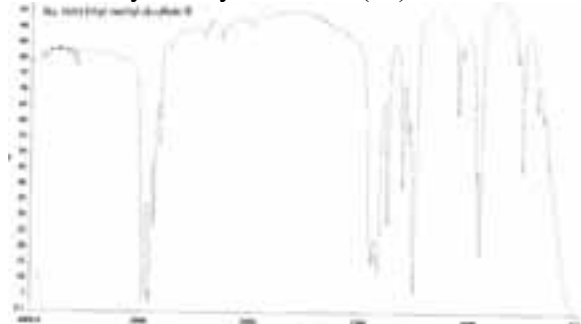
1692 (+/-)-3-(Methylthio)heptanal (IR)



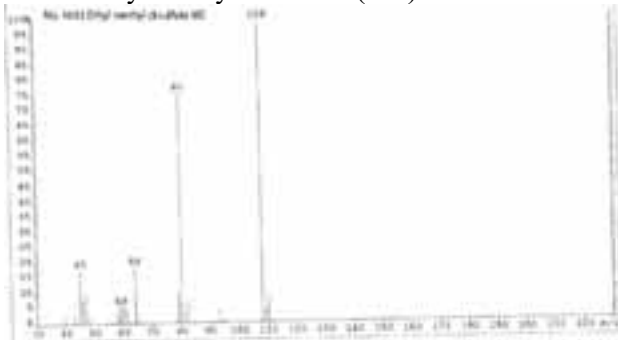
1692 (+/-)-3-(Methylthio)heptanal (MS)

1693 Ethyl methyl disulfide ($^1\text{H-NMR}$)

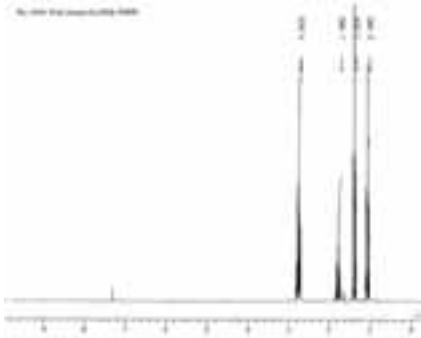
1693 Ethyl methyl disulfide (IR)



1693 Ethyl methyl disulfide (MS)



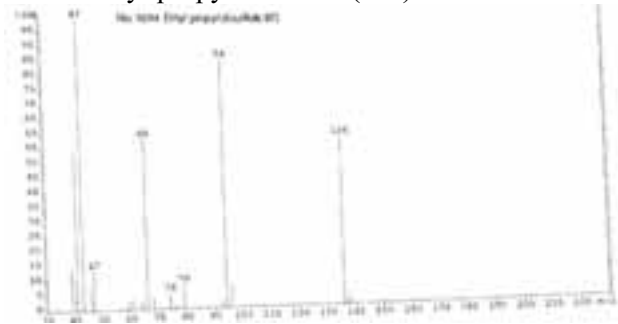
1694 Ethyl propyl disulfide (1H-NMR)



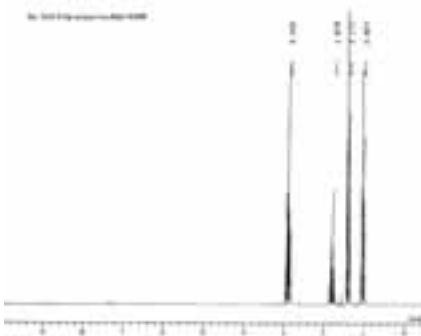
1694 Ethyl propyl disulfide (IR)



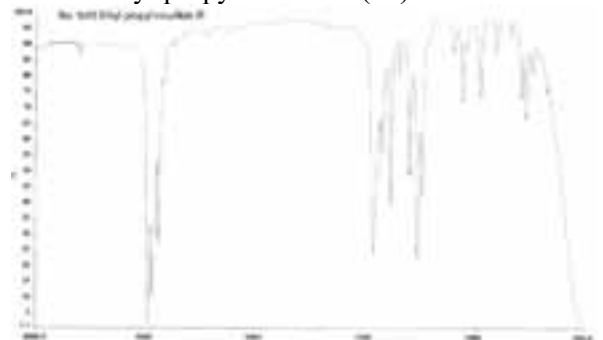
1694 Ethyl propyl disulfide (MS)



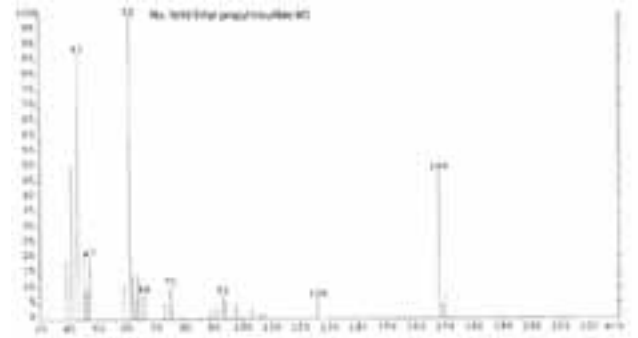
1695 Ethyl propyl trisulfide (1H-NMR)



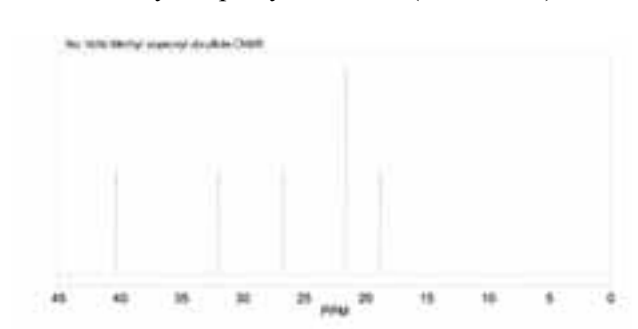
1695 Ethyl propyl trisulfide (IR)



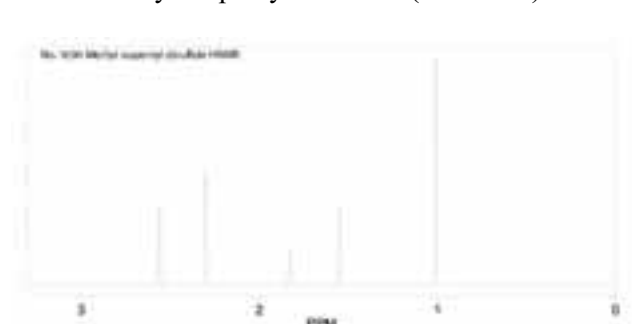
1695 Ethyl propyl trisulfide (MS)



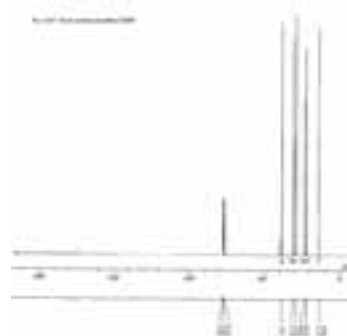
1696 Methyl isopentyl disulfide (13C-NMR)



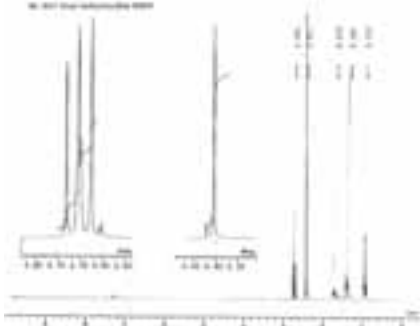
1696 Methyl isopentyl disulfide (1H-NMR)



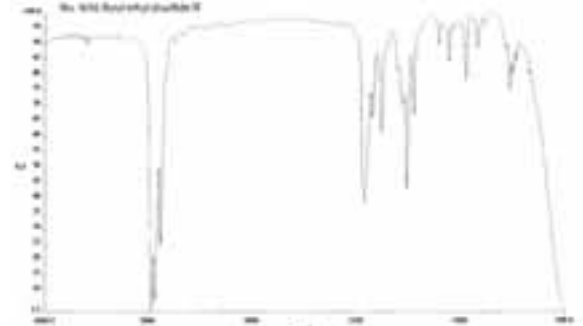
1697 Amyl methyl disulfide (13C-NMR)



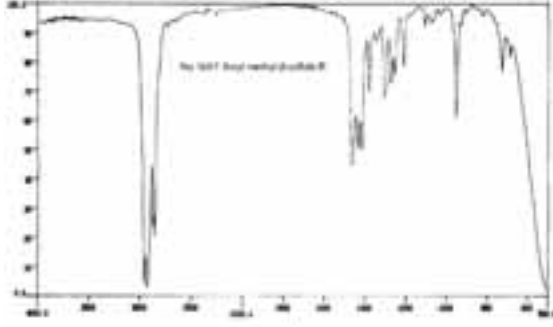
1697 Amyl methyl disulfide (1H-NMR)



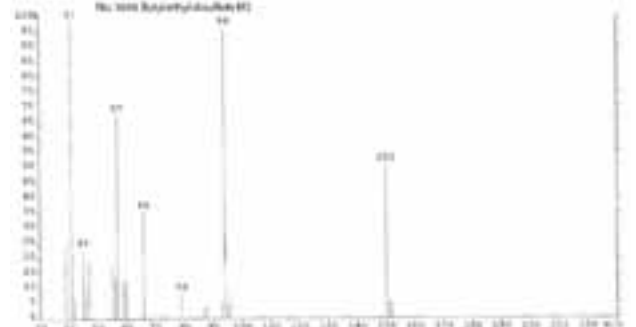
1698 Butyl ethyl disulfide (IR)



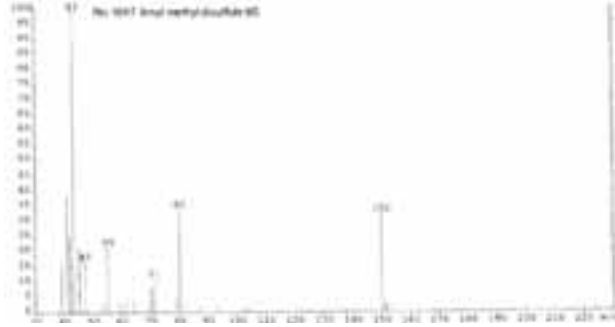
1697 Amyl methyl disulfide (IR)



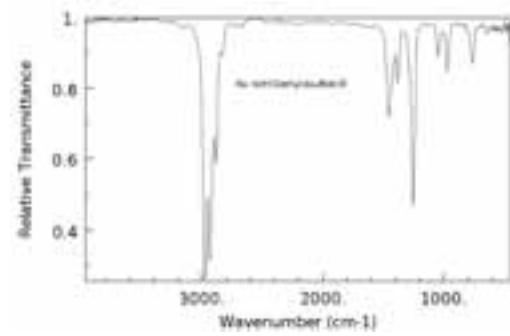
1698 Butyl ethyl disulfide (MS)



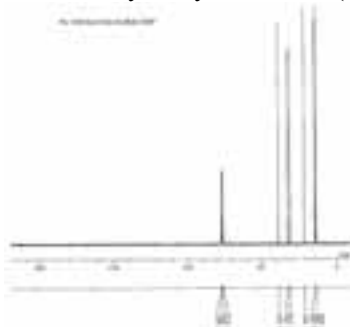
1697 Amyl methyl disulfide (MS)



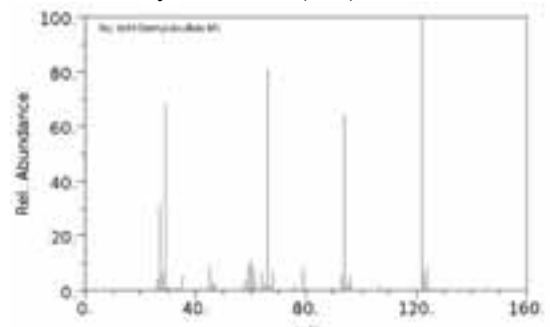
1699 Diethyl disulfide (IR)



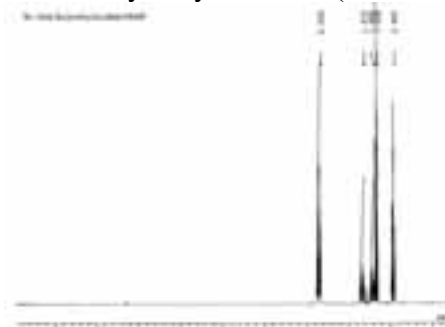
1698 Butyl ethyl disulfide (13C-NMR)



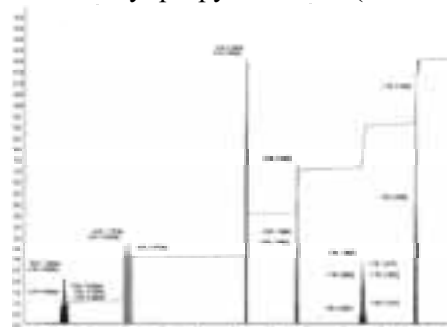
1699 Diethyl disulfide (MS)



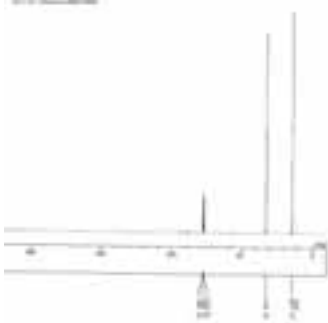
1698 Butyl ethyl disulfide (1H-NMR)



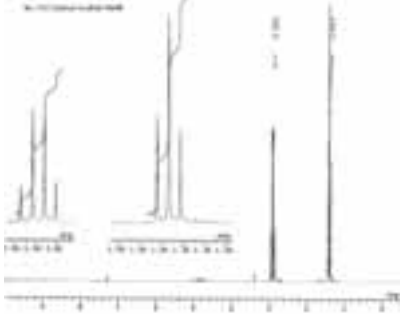
1700 Allyl propyl disulfide (1H-NMR)



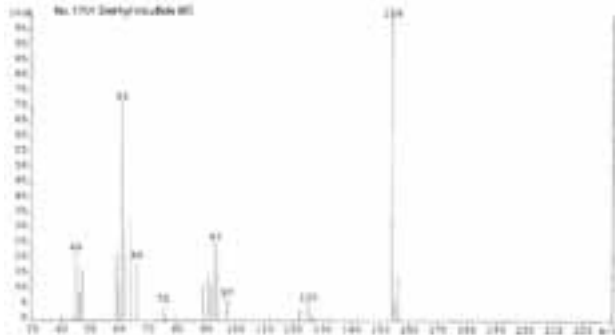
1701 Diethyl trisulfide (13C-NMR)



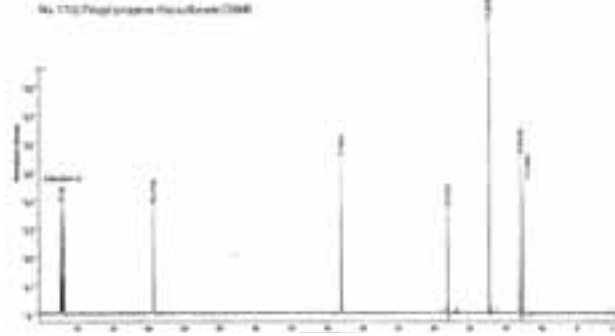
1701 Diethyl trisulfide (1H-NMR)



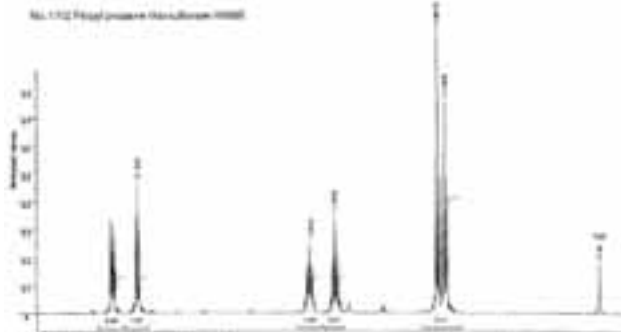
1701 Diethyl trisulfide (MS)



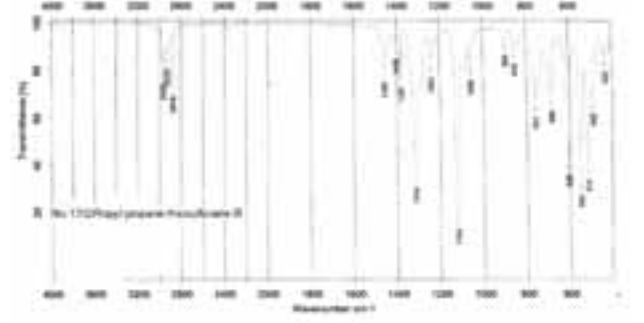
1702 Propyl propane thiosulfonate (13C-NMR)



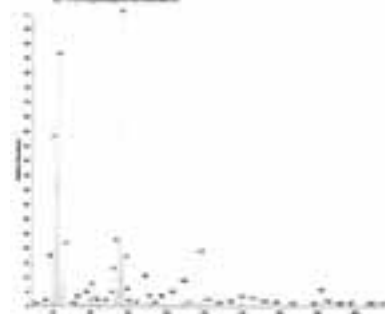
1702 Propyl propane thiosulfonate (1H-NMR)



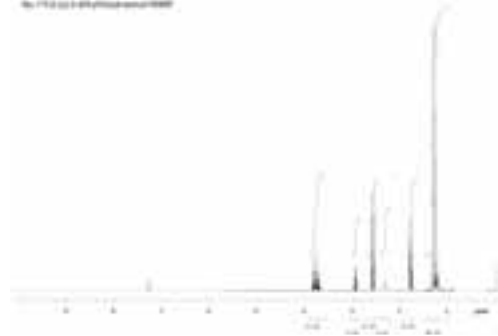
1702 Propyl propane thiosulfonate (IR)



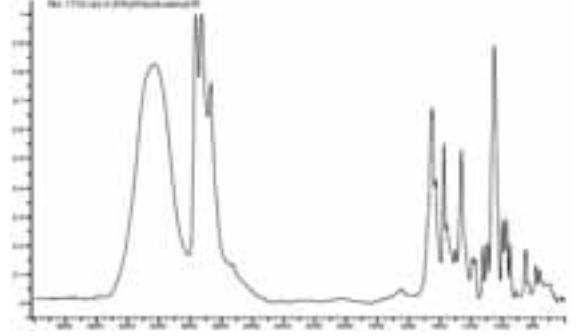
1702 Propyl propane thiosulfonate (MS)



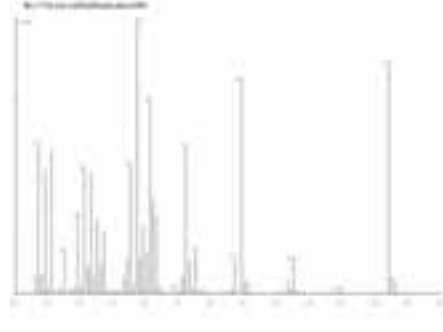
1703 (+/-)-3-(Ethylthio)butanol (1H-NMR)



1703 (+/-)-3-(Ethylthio)butanol (IR)



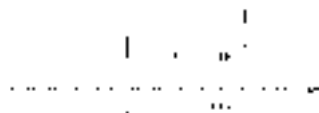
1703 (+/-)-3-(Ethylthio)butanol (MS)



1704 Hexyl 3-mercaptopbutanoate (1H-NMR)



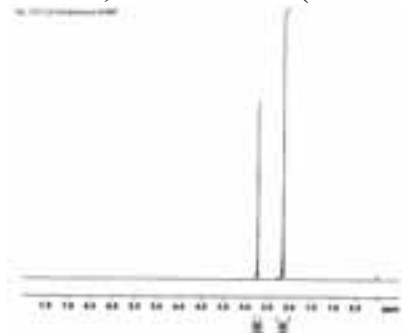
1705 (+/-)-3-Mercapto-1-butyl acetate (1H-NMR)



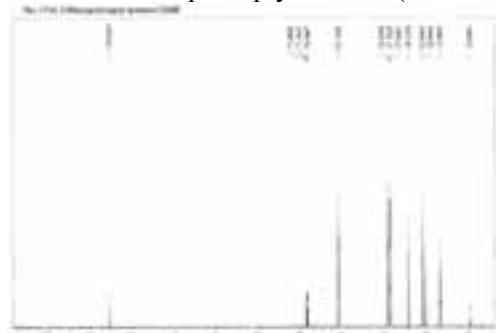
1706 3-Mercapto-3-methyl-1-butyl acetate (1H-NMR)



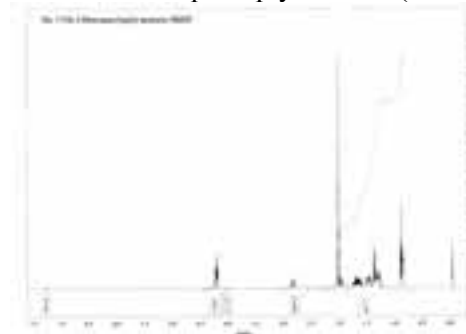
1707 2,5-Dithiahexane (1H-NMR)



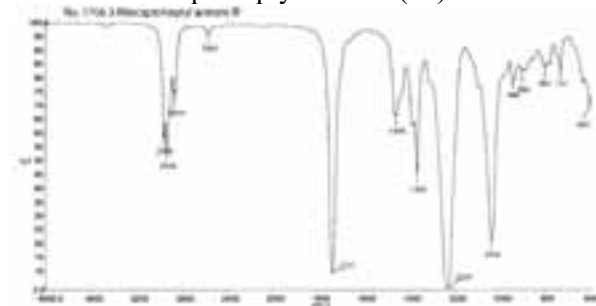
1708 3-Mercaptoheptyl acetate (13C-NMR)



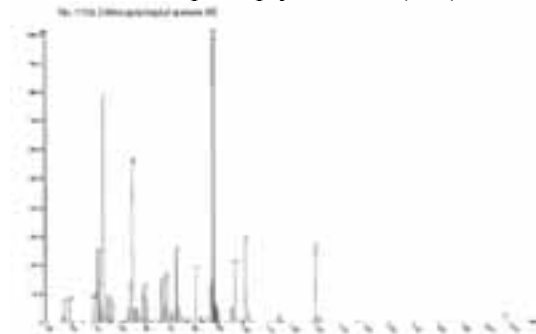
1708 3-Mercaptoheptyl acetate (1H-NMR)



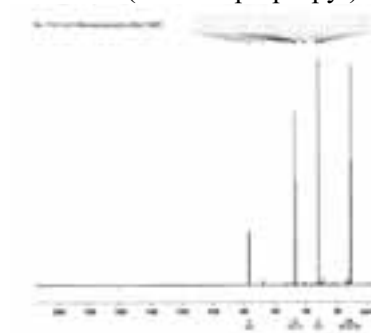
1708 3-Mercaptoheptyl acetate (IR)



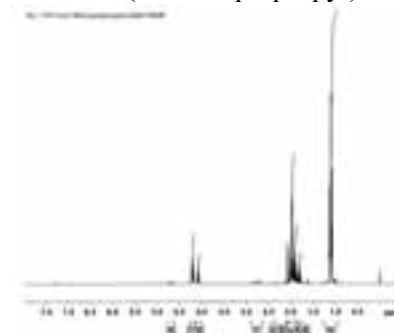
1708 3-Mercaptoheptyl acetate (MS)



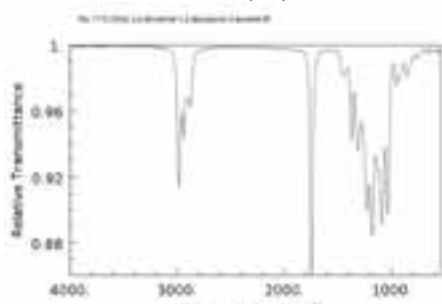
1709 bis(1-Mercaptopropyl)sulfide (13C-NMR)



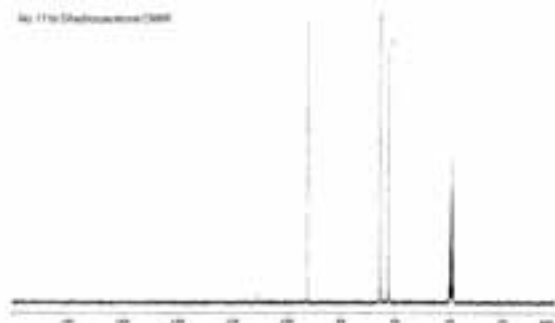
1709 bis(1-Mercaptopropyl)sulfide (1H-NMR)



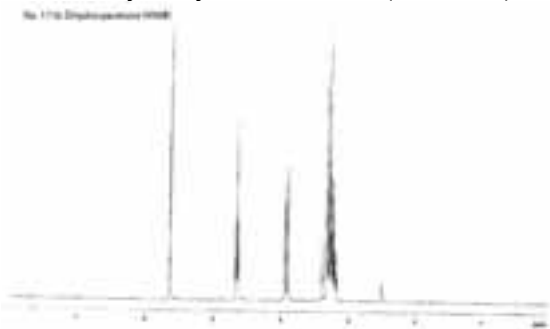
1715 cis- and trans-Ethyl 2,4-dimethyl-1,3-dioxolane-2-acetate (IR)



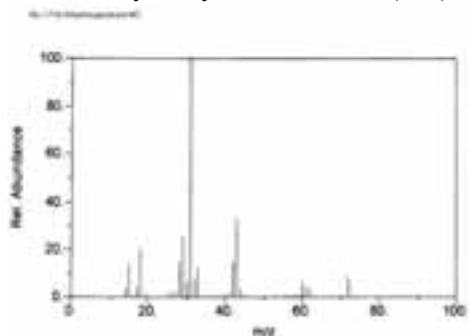
1716 Dihydroxyacetone dimer (13C-NMR)



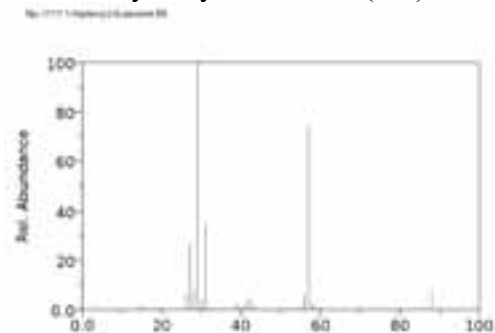
1716 Dihydroxyacetone dimer (1H-NMR)



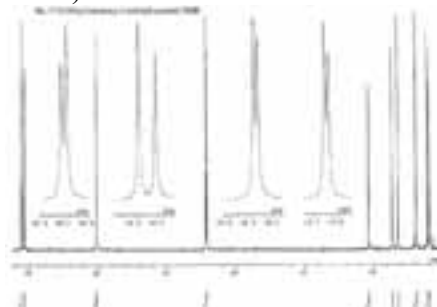
1716 Dihydroxyacetone dimer (MS)



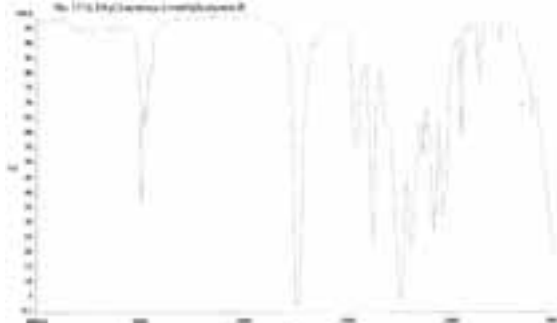
1717 1-Hydroxy-2-butanone (MS)



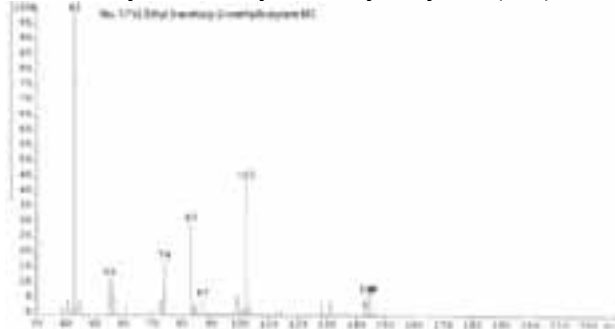
1718 Ethyl 3-acetoxy-2-methylbutyrate (13C-NMR)



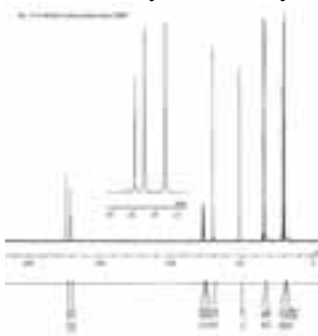
1718 Ethyl 3-acetoxy-2-methylbutyrate (IR)



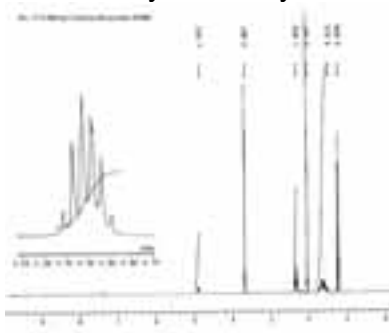
1718 Ethyl 3-acetoxy-2-methylbutyrate (MS)



1719 Methyl 5-acetoxyhexanoate (13C-NMR)



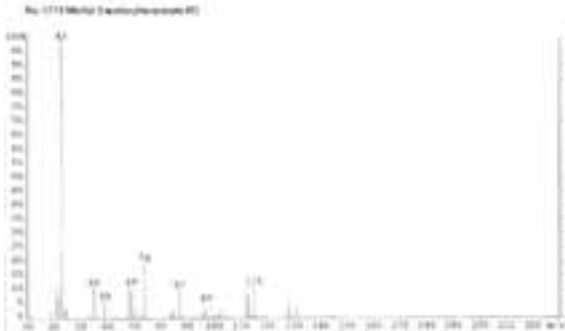
1719 Methyl 5-acetoxyhexanoate (1H-NMR)



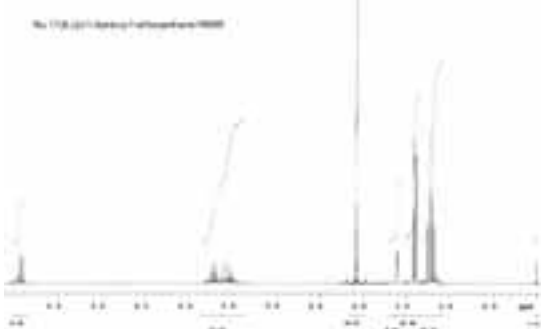
1719 Methyl 5-acetoxyhexanoate (IR)



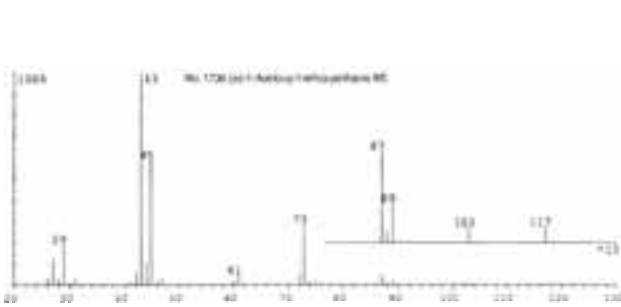
1719 Methyl 5-acetoxyhexanoate (MS)



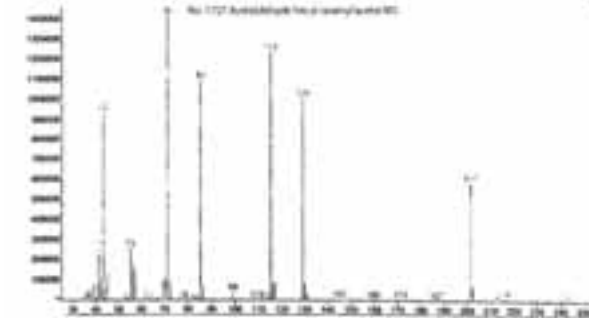
1726 (+/-)-1-Acetoxy-1-ethoxyethane (1H-NMR)



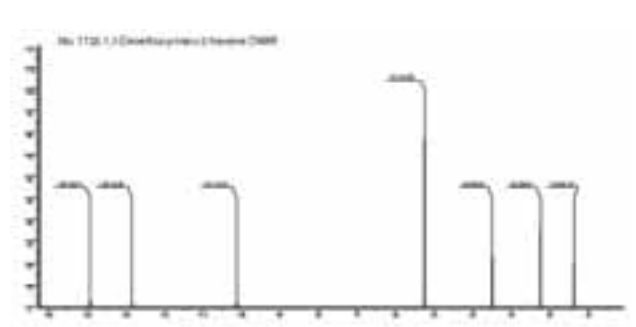
1726 (+/-)-1-Acetoxy-1-ethoxyethane (MS)



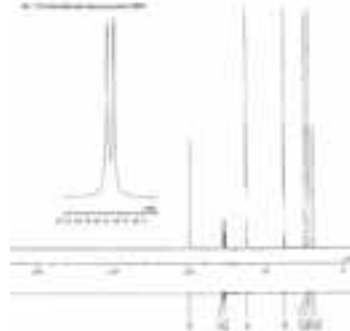
1727 Acetaldehyde hexyl isoamyl acetal (MS)



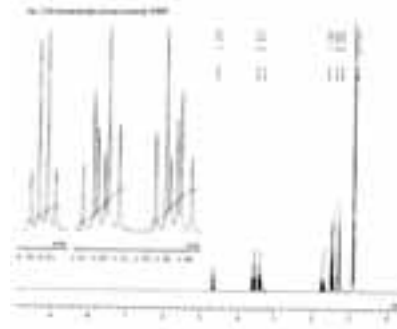
1728 1,1-Dimethoxy-trans-2-hexene (13C-NMR)



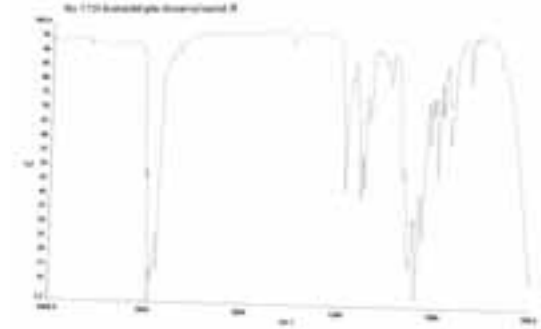
1729 Acetaldehyde diisoamyl acetal (13C-NMR)



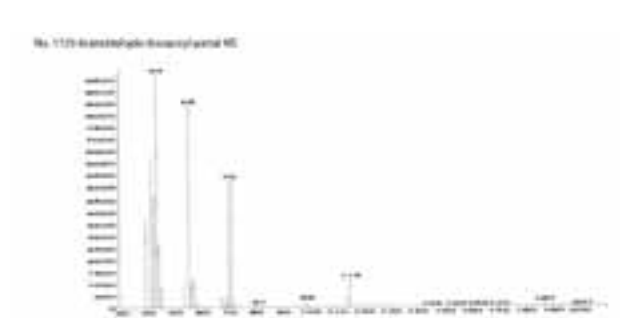
1729 Acetaldehyde diisoamyl acetal (1H-NMR)



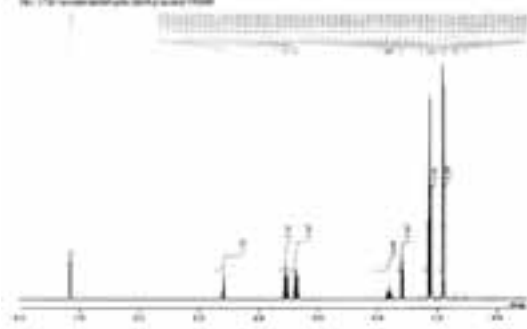
1729 Acetaldehyde diisoamyl acetal (IR)



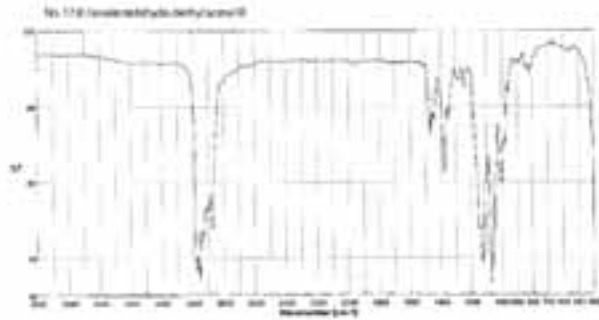
1729 Acetaldehyde diisoamyl acetal (MS)



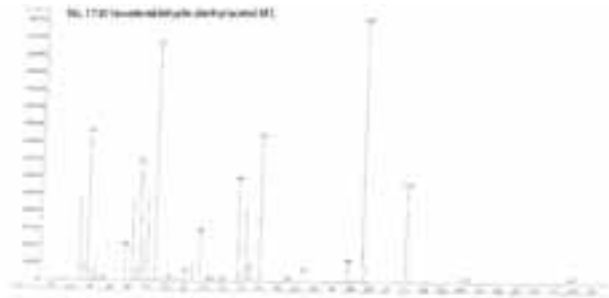
1730 Isovaleraldehyde diethyl acetal (1H-NMR)



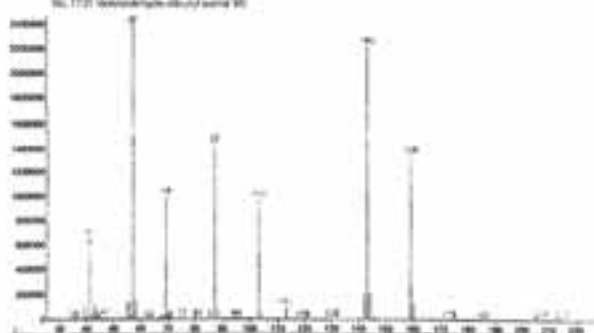
1730 Isovaleraldehyde diethyl acetal (IR)



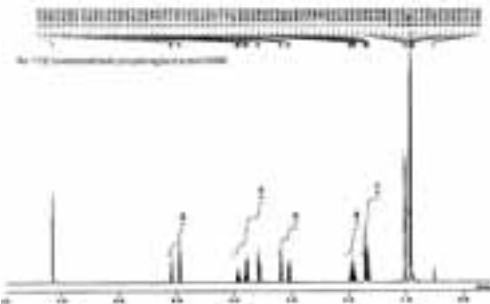
1730 Isovaleraldehyde diethyl acetal (MS)



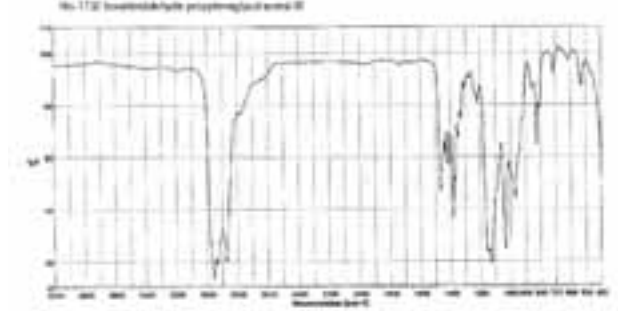
1731 Valeraldehyde dibutyl acetal (MS)



1732 Isovaleraldehyde propyleneglycol acetal (1H-NMR)



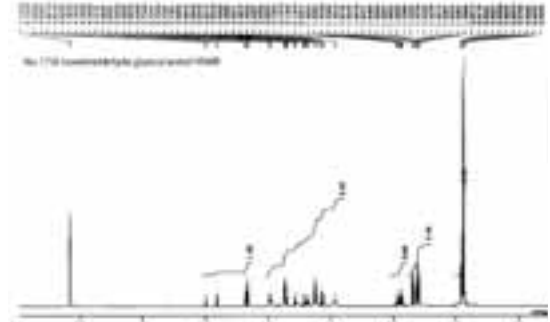
1732 Isovaleraldehyde propyleneglycol acetal (IR)



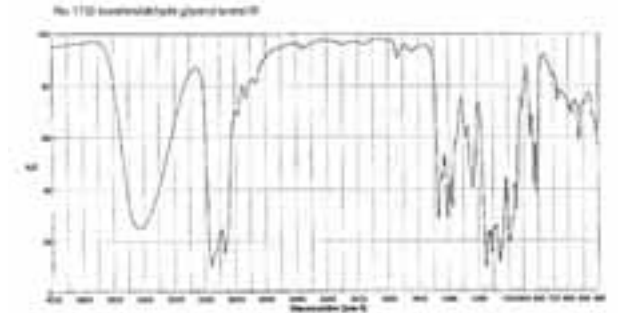
1732 Isovaleraldehyde propyleneglycol acetal (MS)



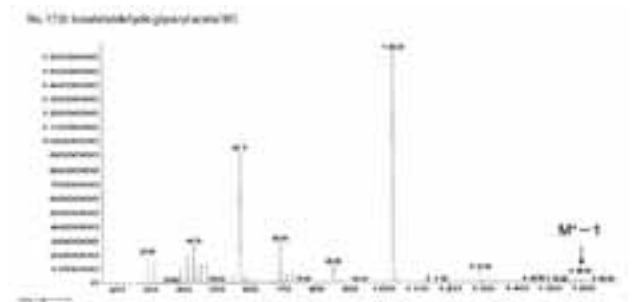
1733 Isovaleraldehyde glyceryl acetal (1H-NMR)



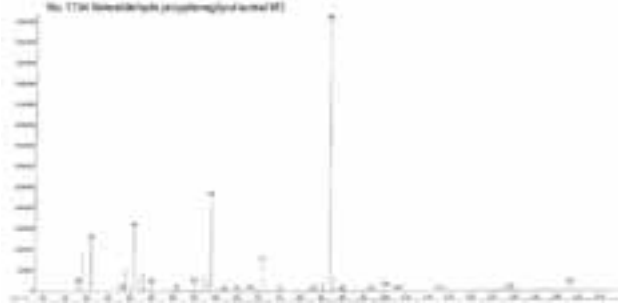
1733 Isovaleraldehyde glyceryl acetal (IR)



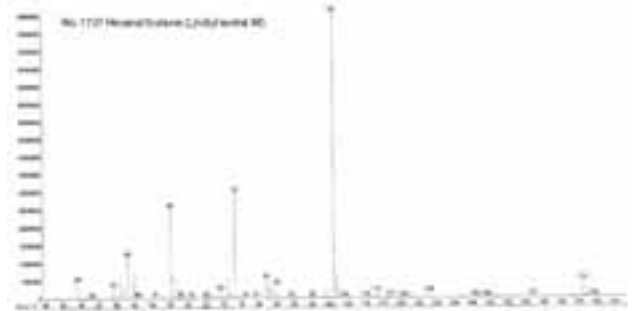
1733 Isovaleraldehyde glyceryl acetal (MS)



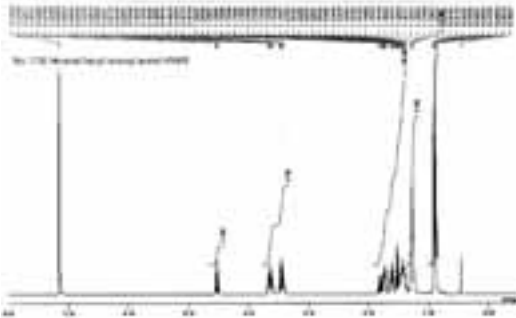
1734 Valeraldehyde propyleneglycol acetal (MS)



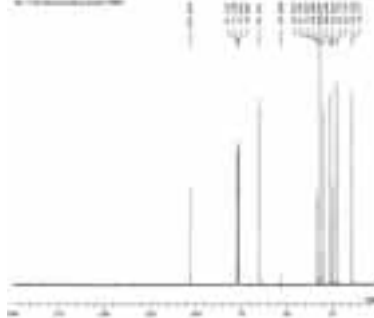
1737 Hexanal butane-2,3-diol acetal (MS)



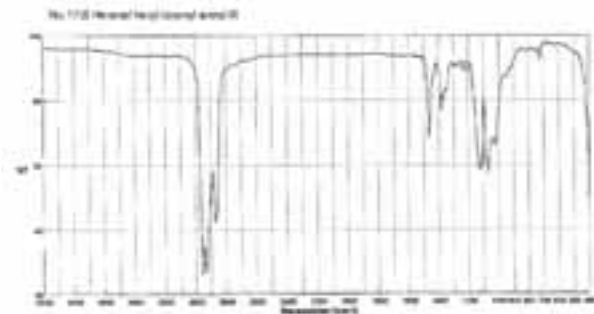
1735 Hexanal hexyl isoamyl acetal (1H-NMR)



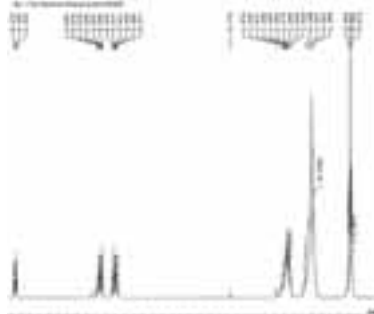
1738 Hexanal dihexyl acetal (13C-NMR)



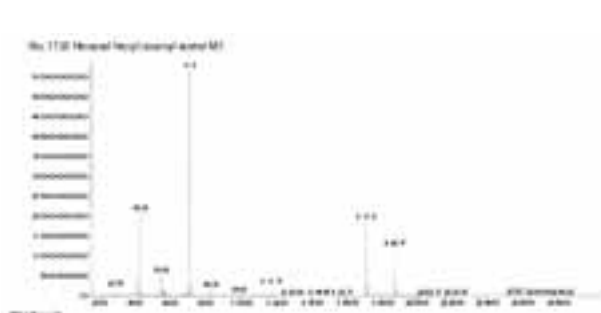
1735 Hexanal hexyl isoamyl acetal (IR)



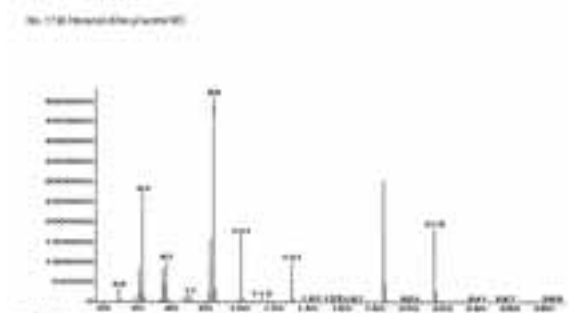
1738 Hexanal dihexyl acetal (1H-NMR)



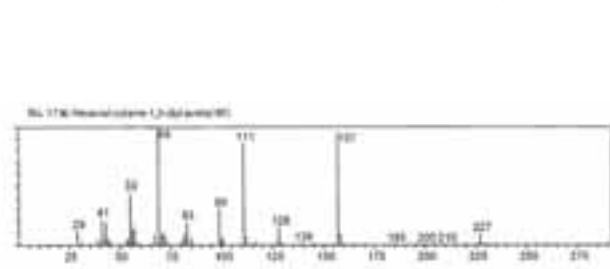
1735 Hexanal hexyl isoamyl acetal (MS)



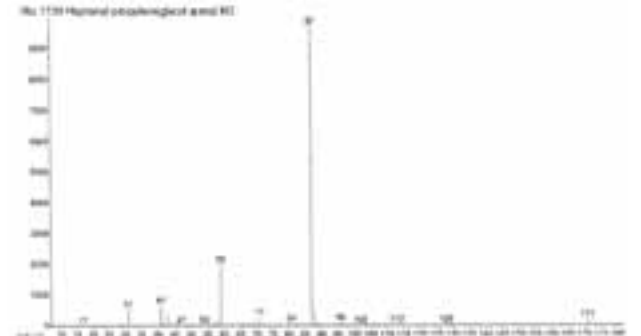
1738 Hexanal dihexyl acetal (MS)



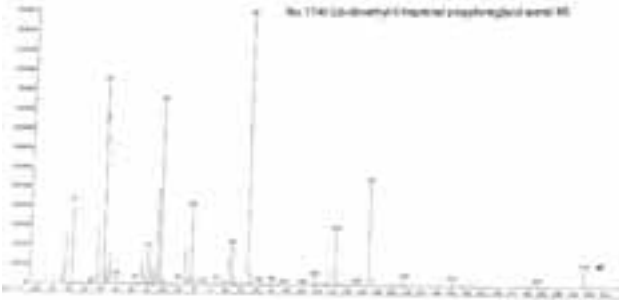
1736 Hexanal octane-1,3-diol acetal (MS)



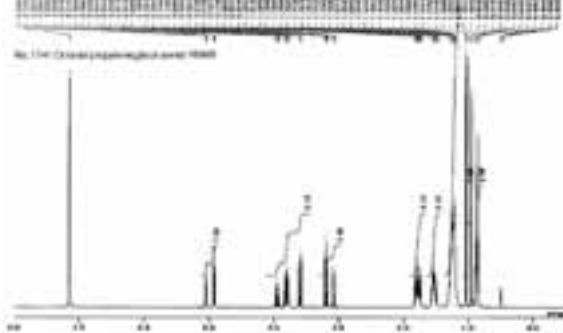
1739 Heptanal propyleneglycol acetal (MS)



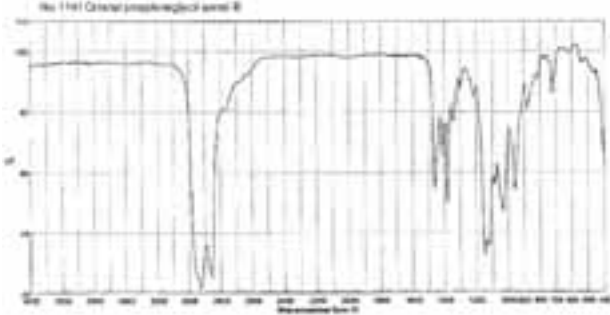
1740 2,6-Dimethyl-5-heptenal propyleneglycol acetal (MS)



1741 Octanal propyleneglycol acetal (1H-NMR)



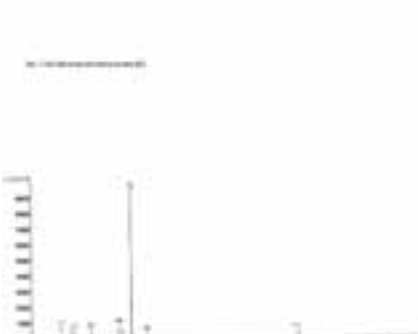
1741 Octanal propyleneglycol acetal (IR)



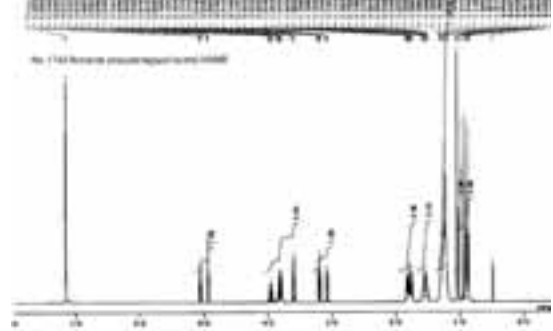
1741 Octanal propyleneglycol acetal (MS)



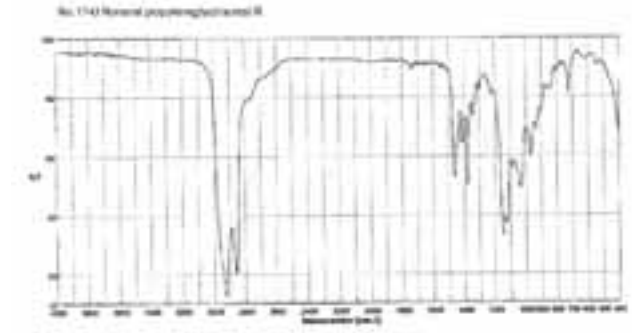
1742 Nonanal dimethyl acetal (MS)



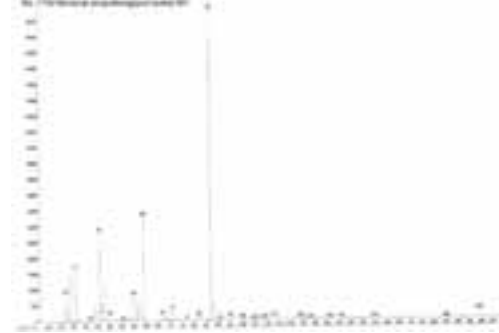
1743 Nonanal propyleneglycol acetal (1H-NMR)



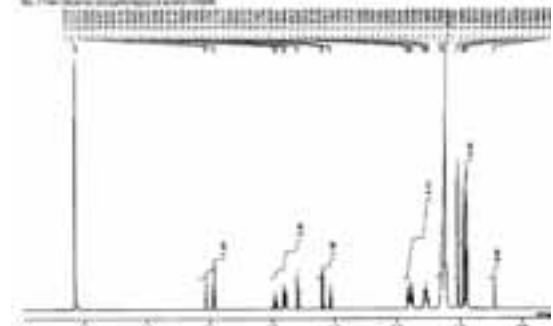
1743 Nonanal propyleneglycol acetal (IR)



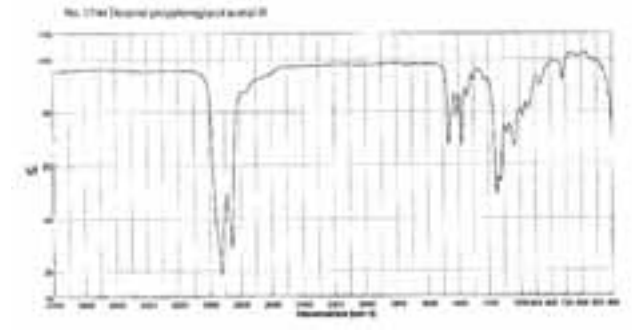
1743 Nonanal propyleneglycol acetal (MS)



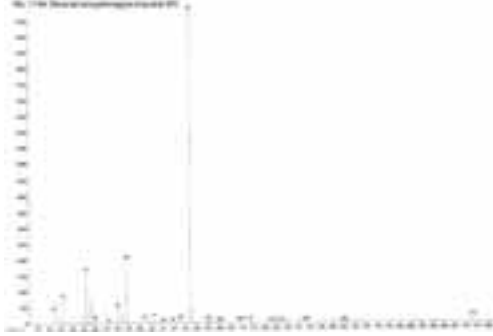
1744 Decanal propyleneglycol acetal (1H-NMR)



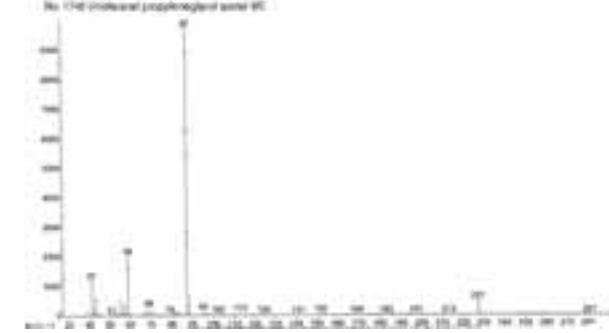
1744 Decanal propyleneglycol acetal (IR)



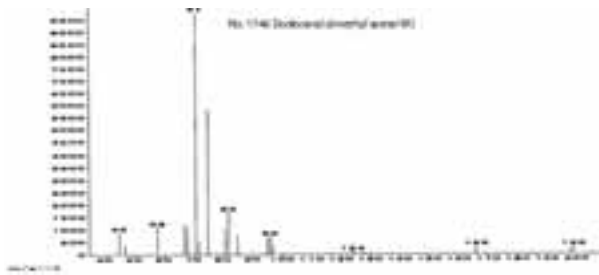
1744 Decanal propyleneglycol acetal (MS)



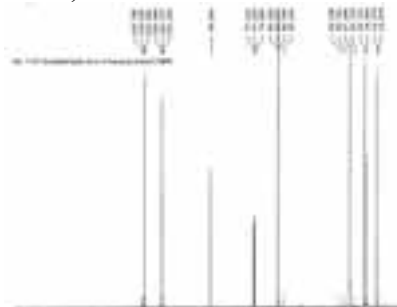
1745 Undecanal propyleneglycol acetal (MS)



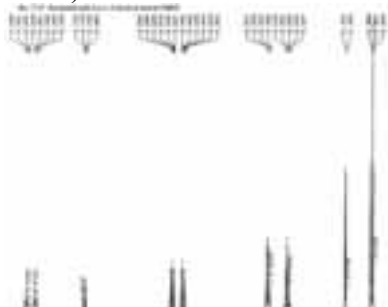
1746 Dodecanal dimethyl acetal (MS)



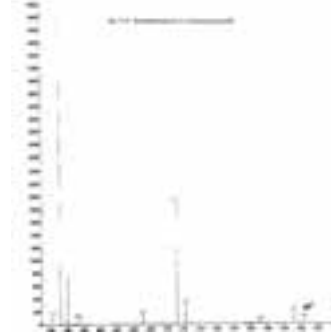
1747 Acetaldehyde di-cis-3-hexenyl acetal (13C-NMR)



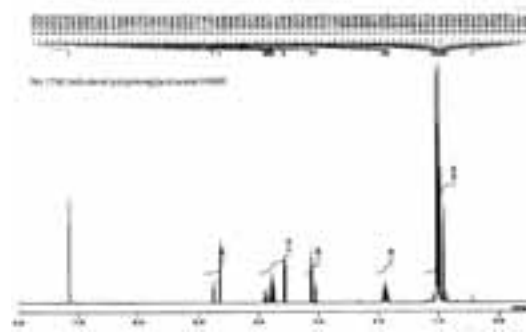
1747 Acetaldehyde di-cis-3-hexenyl acetal (1H-NMR)



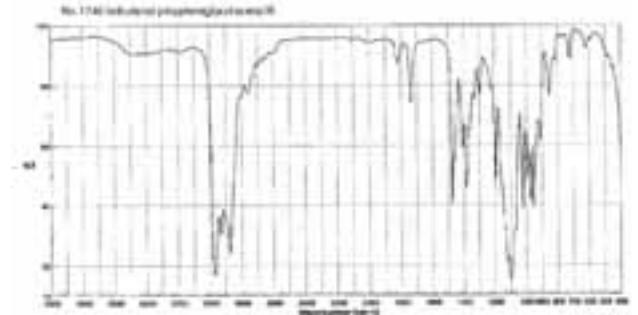
1747 Acetaldehyde di-cis-3-hexenyl acetal (MS)



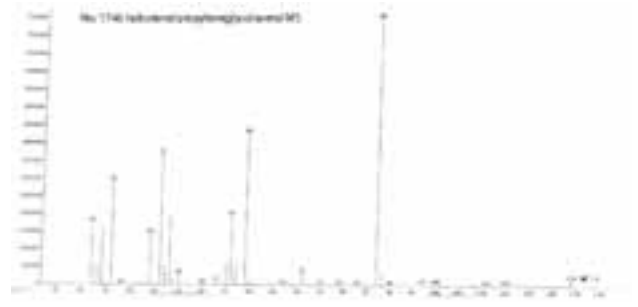
1748 Isobutanal propyleneglycol acetal (1H-NMR)



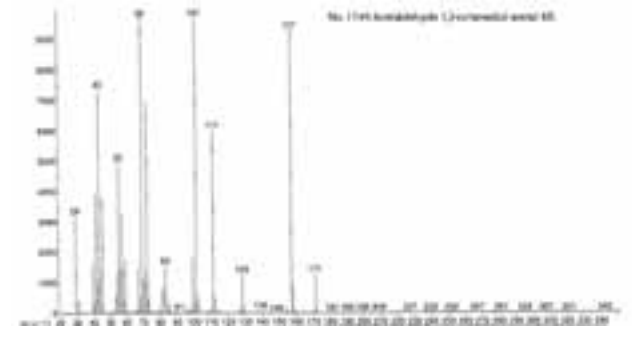
1748 Isobutanal propyleneglycol acetal (IR)

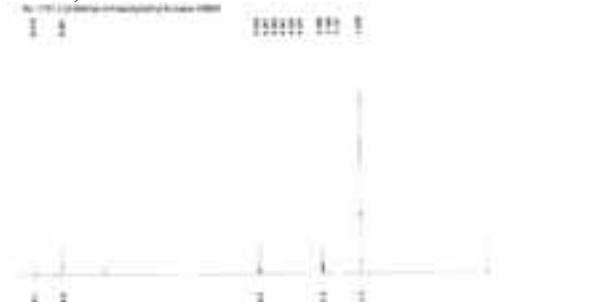


1748 Isobutanal propyleneglycol acetal (MS)

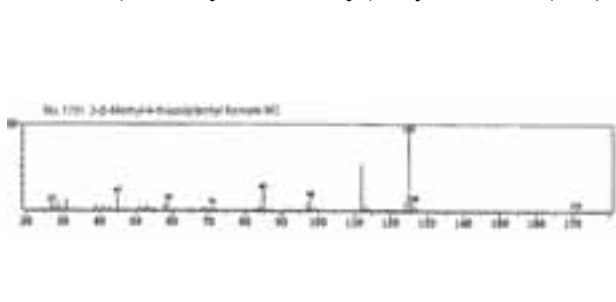
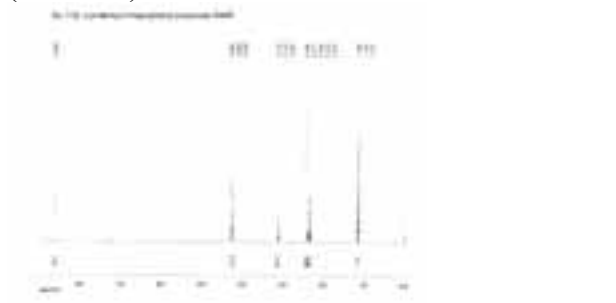
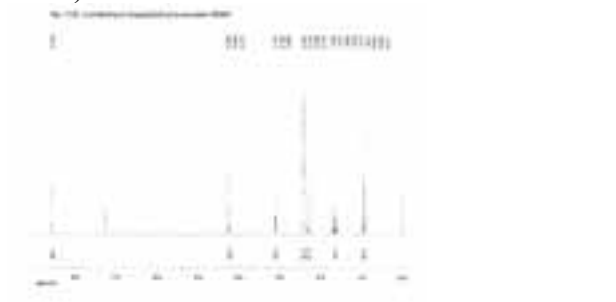
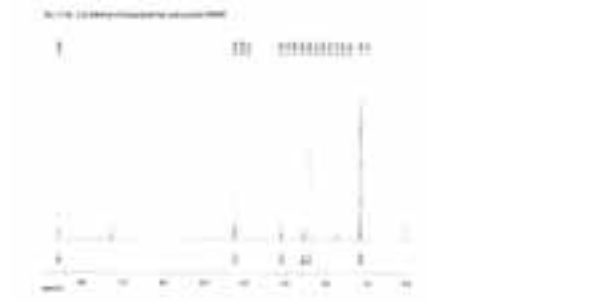
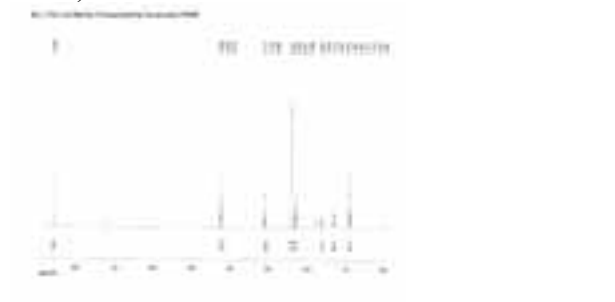
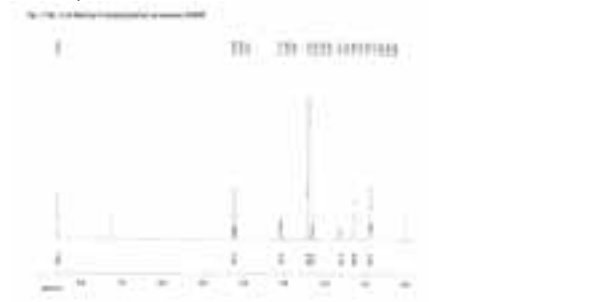
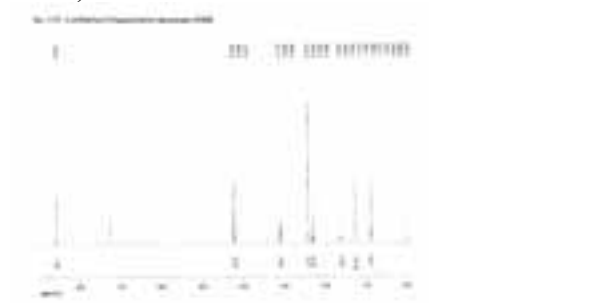
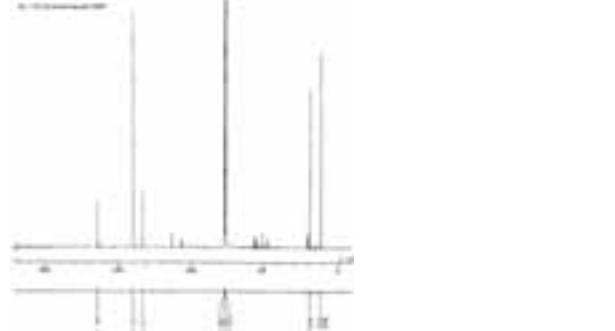


1749 Acetaldehyde 1,3-octanediol acetal (MS)

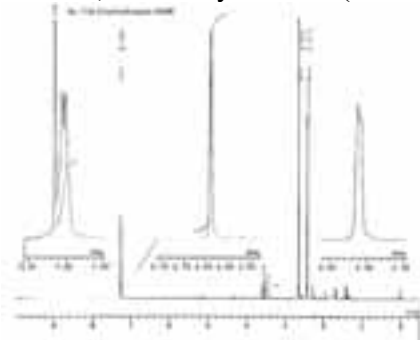


1750 1-(3-Hydroxy-5-methyl-2-thienyl)ethanone
(¹H-NMR)1751 2-(5-Methyl-4-thiazolyl)ethyl formate (¹H-NMR)

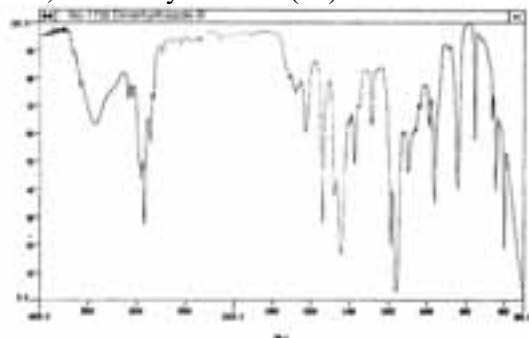
1751 2-(5-Methyl-4-thiazolyl)ethyl formate (MS)

1752 2-(4-Methyl-5-thiazolyl)ethyl propionate (¹H-NMR)1753 2-(4-Methyl-5-thiazolyl)ethyl butanoate (¹H-NMR)1754 2-(4-Methyl-5-thiazolyl)ethyl isobutyrate (¹H-NMR)1755 2-(4-Methyl-5-thiazolyl)ethyl hexanoate (¹H-NMR)1756 2-(4-Methyl-5-thiazolyl)ethyl octanoate (¹H-NMR)1757 2-(4-Methyl-5-thiazolyl)ethyl decanoate (¹H-NMR)1758 2,5-Dimethylthiazole (¹³C-NMR)

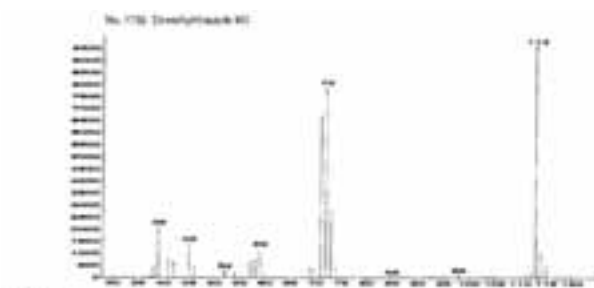
1758 2,5-Dimethylthiazole (1H-NMR)



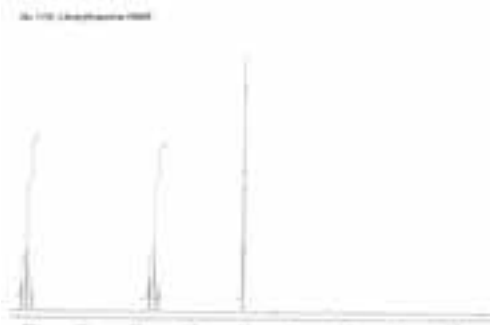
1758 2,5-Dimethylthiazole (IR)



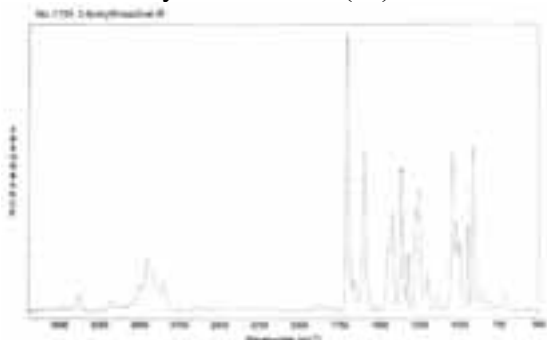
1758 2,5-Dimethylthiazole (MS)



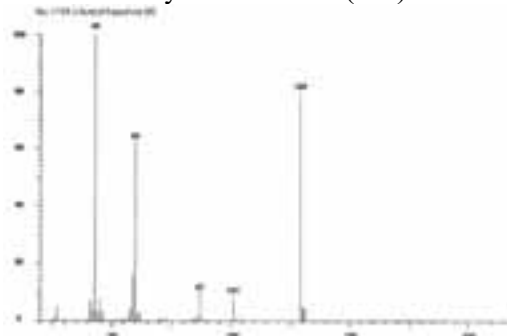
1759 2-Acetyl-2-thiazoline (1H-NMR)



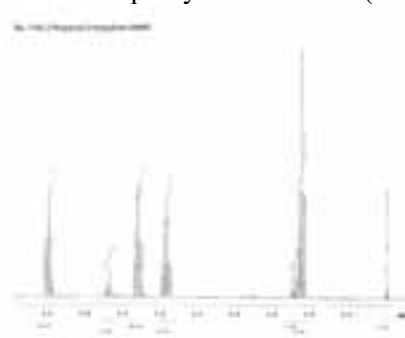
1759 2-Acetyl-2-thiazoline (IR)



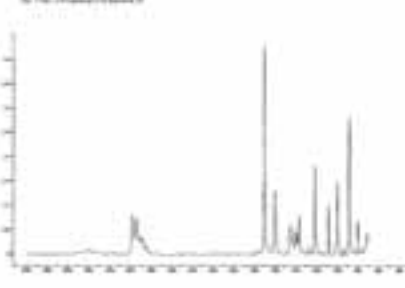
1759 2-Acetyl-2-thiazoline (MS)



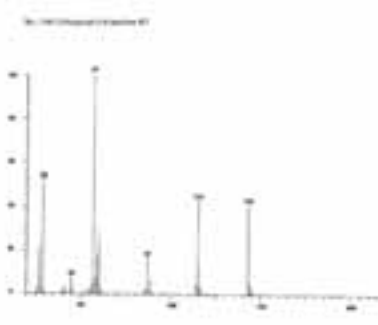
1760 2-Propionyl-2-thiazoline (1H-NMR)



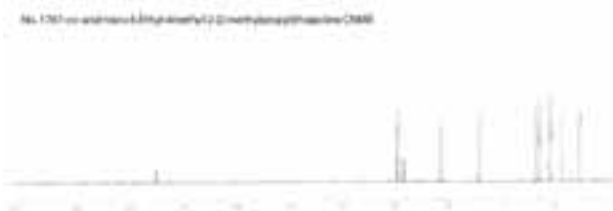
1760 2-Propionyl-2-thiazoline (IR)



1760 2-Propionyl-2-thiazoline (MS)



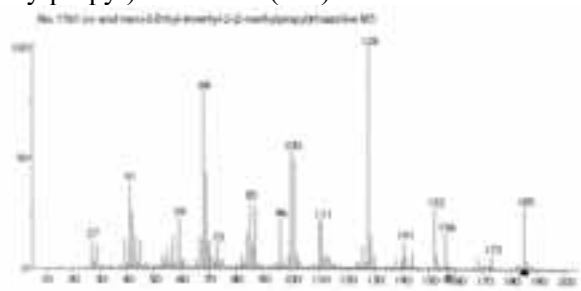
1761 cis- and trans-5-Ethyl-4-methyl-2-(2-methylpropyl)-thiazoline (13C-NMR)



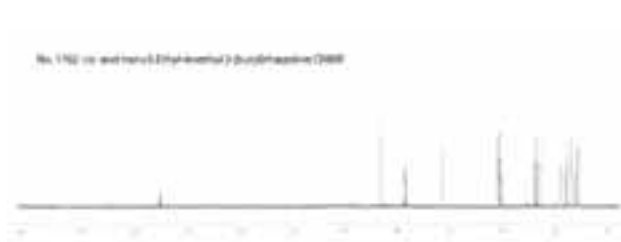
1761 cis- and trans-5-Ethyl-4-methyl-2-(2-methylpropyl)-thiazoline (1H-NMR)



1761 cis- and trans-5-Ethyl-4-methyl-2-(2-methylpropyl)-thiazoline (MS)



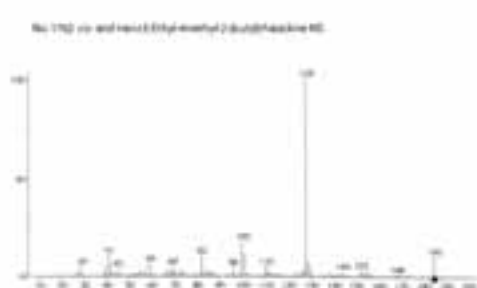
1762 cis- and trans-5-Ethyl-4-methyl-2-(1-methylpropyl)-thiazoline (13C-NMR)



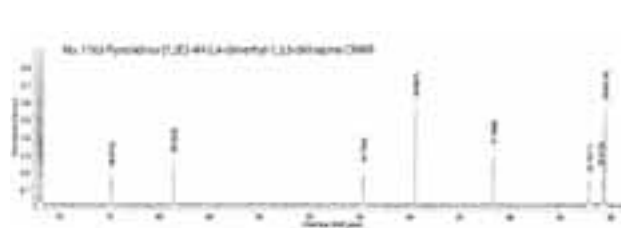
1762 cis- and trans-5-Ethyl-4-methyl-2-(1-methylpropyl)-thiazoline (1H-NMR)



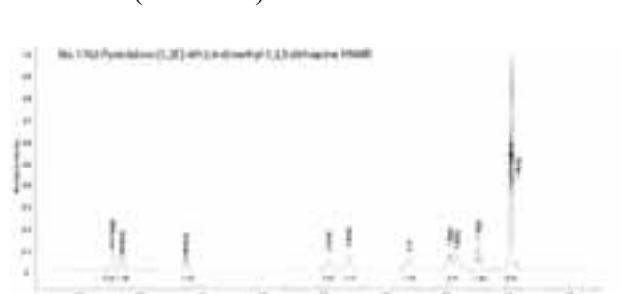
1762 cis- and trans-5-Ethyl-4-methyl-2-(1-methylpropyl)-thiazoline (MS)



1763 Pyrrolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-dithiazine (13C-NMR)



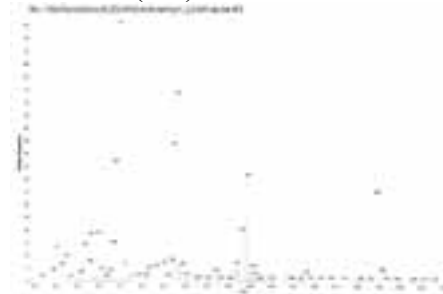
1763 Pyrrolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-dithiazine (1H-NMR)



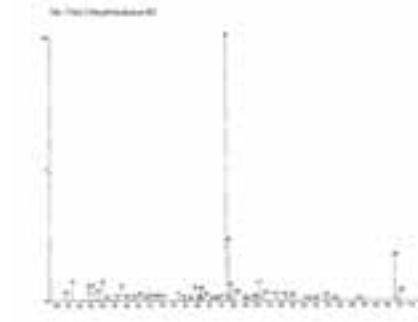
1763 Pyrrolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-dithiazine (IR)



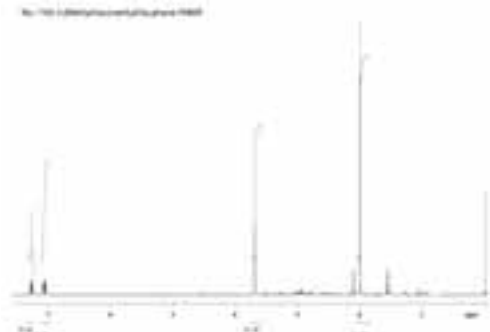
1763 Pyrrolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-dithiazine (MS)



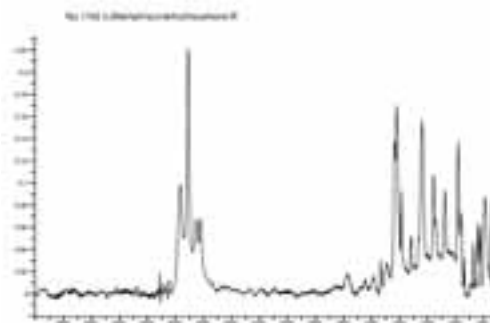
1764 2-Hexylthiophene (MS)



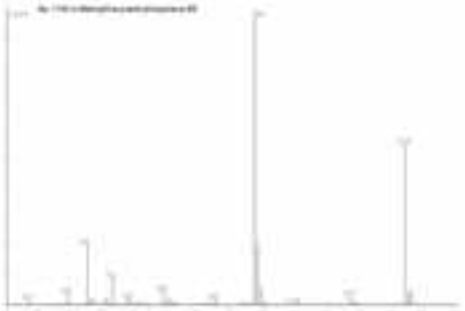
1765 3-(Methylthio)methylthiophene (1H-NMR)



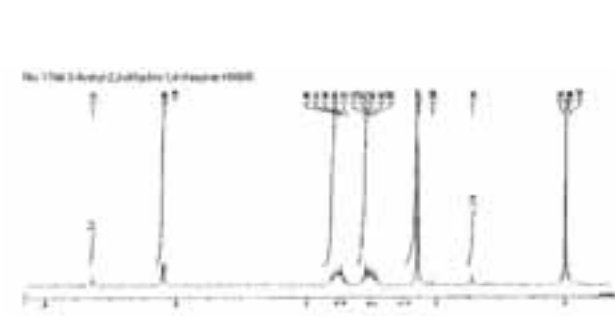
1765 3-(Methylthio)methylthiophene (IR)



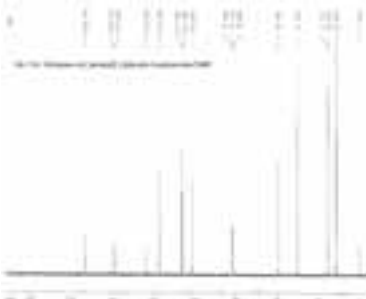
1765 3-(Methylthio)methylthiophene (MS)



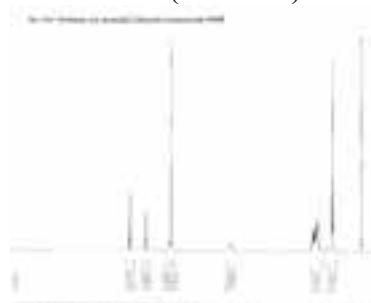
1766 5-Acetyl-2,3-dihydro-1,4-thiazine (1H-NMR)



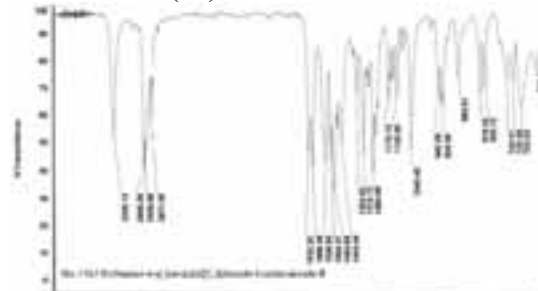
1767 N-Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide (13C-NMR)



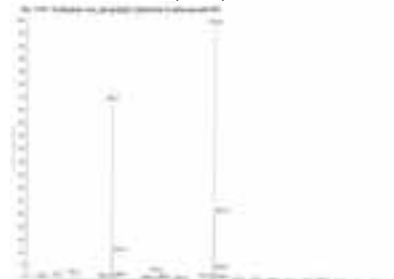
1767 N-Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide (1H-NMR)



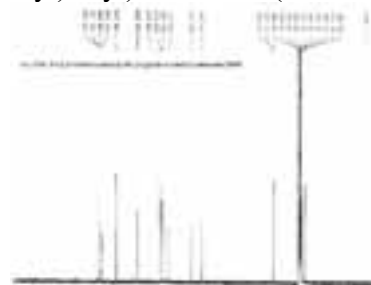
1767 N-Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide (IR)



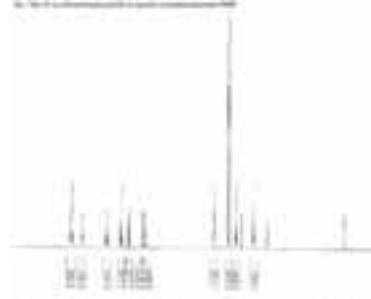
1767 N-Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide (MS)



1768 N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (13C-NMR)



1768 N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (1H-NMR)



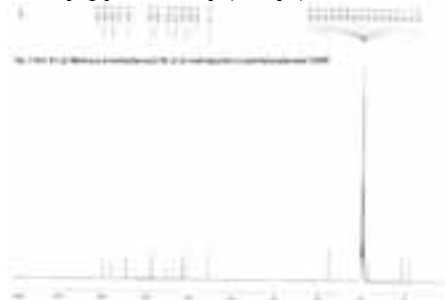
1768 N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (IR)



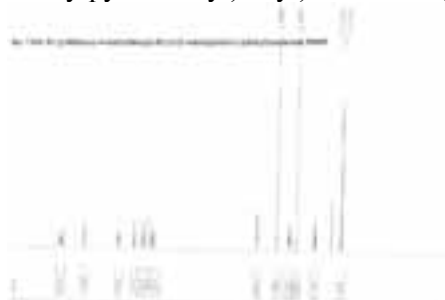
1768 N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (MS)



1769 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(5-methylpyridin-2-yl)ethyl)oxalamide (13C-NMR)



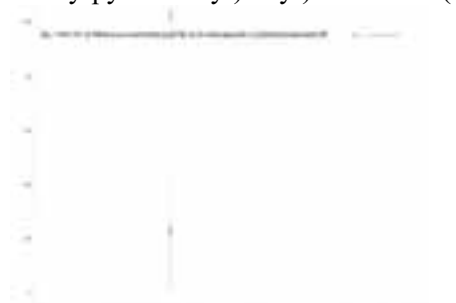
1769 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(5-methylpyridin-2-yl)ethyl)oxalamide (1H-NMR)



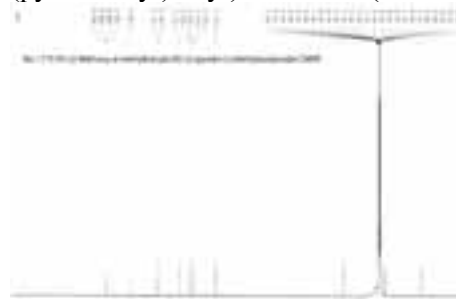
1769 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(5-methylpyridin-2-yl)ethyl)oxalamide (IR)



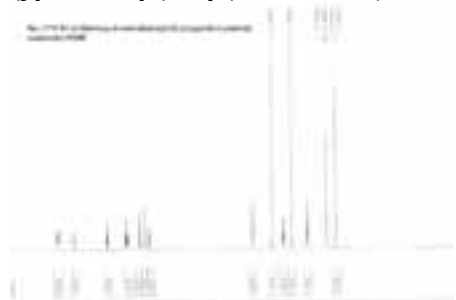
1769 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(5-methylpyridin-2-yl)ethyl)oxalamide (MS)



1770 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (13C-NMR)



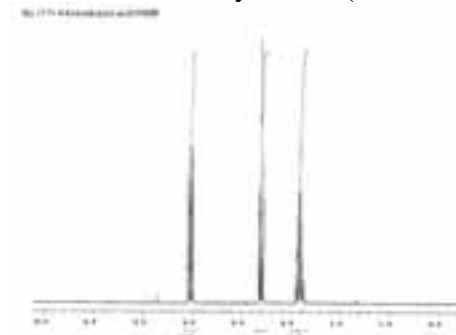
1770 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (1H-NMR)



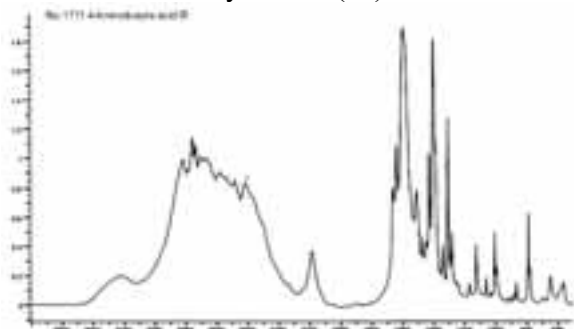
1770 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (IR)



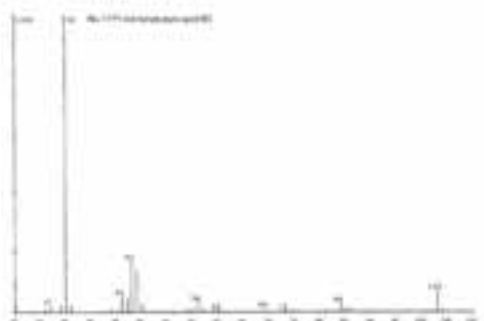
1771 4-Aminobutyric acid (1H-NMR)



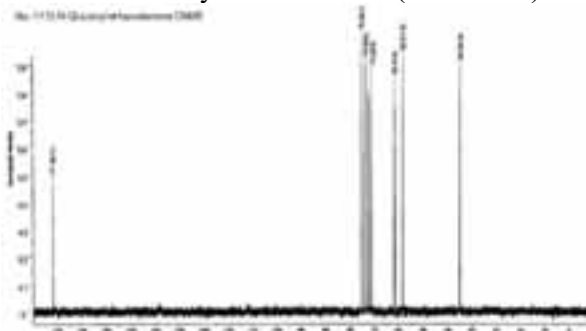
1771 4-Aminobutyric acid (IR)



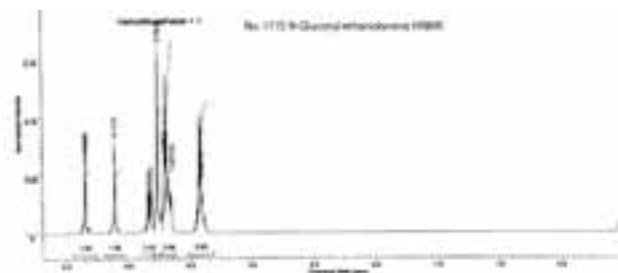
1771 4-Aminobutyric acid (MS)



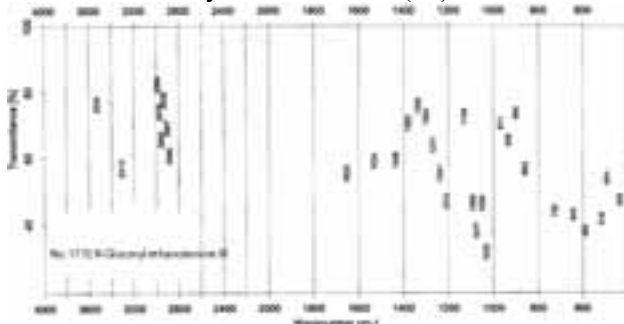
1772 N-Gluconyl ethanolamine (13C-NMR)



1772 N-Gluconyl ethanolamine (1H-NMR)



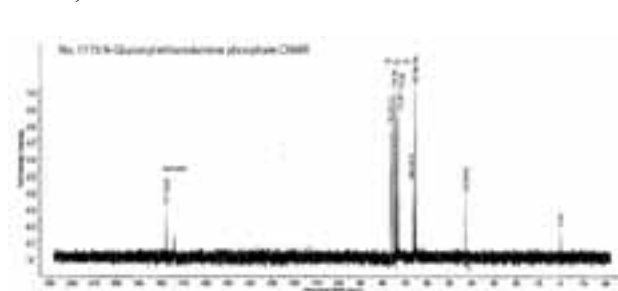
1772 N-Gluconyl ethanolamine (IR)



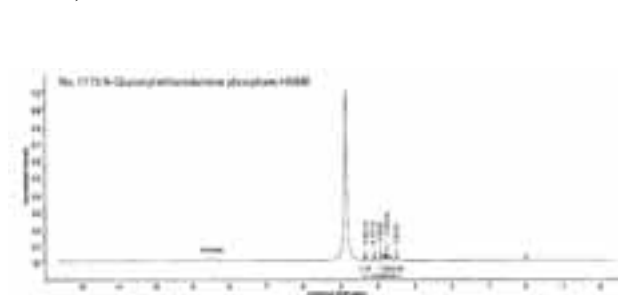
1772 N-Gluconyl ethanolamine (MS)



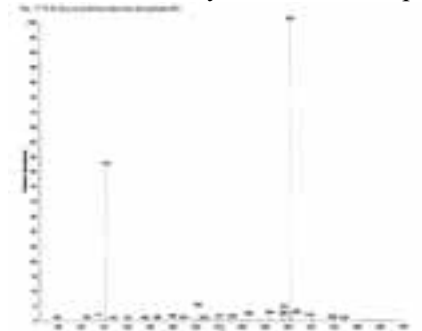
1773 N-Gluconyl ethanolamine phosphate (13C-NMR)



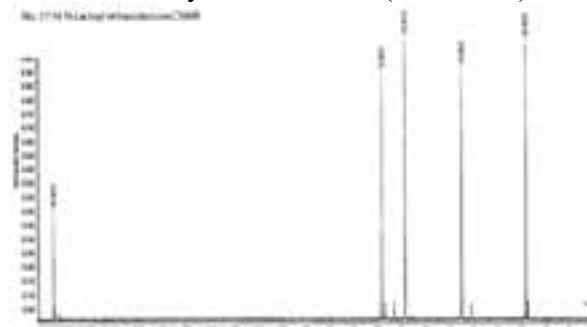
1773 N-Gluconyl ethanolamine phosphate (1H-NMR)



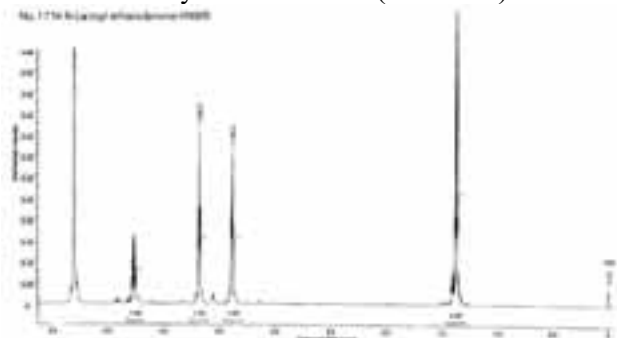
1773 N-Gluconyl ethanolamine phosphate (MS)



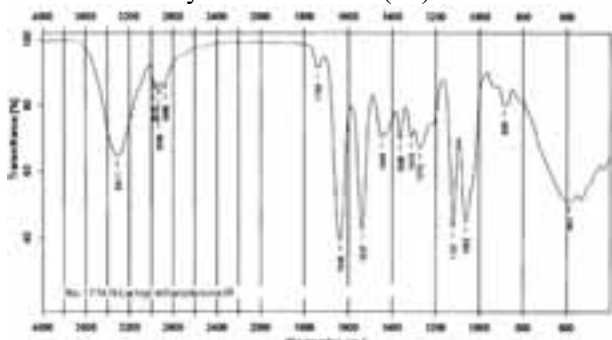
1774 N-Lactoyl ethanolamine (13C-NMR)



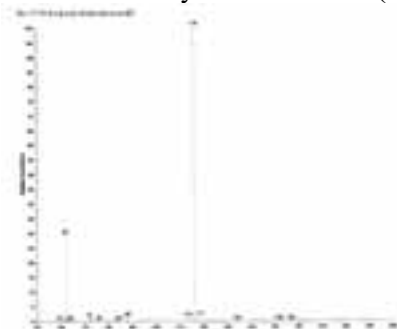
1774 N-Lactoyl ethanolamine (1H-NMR)



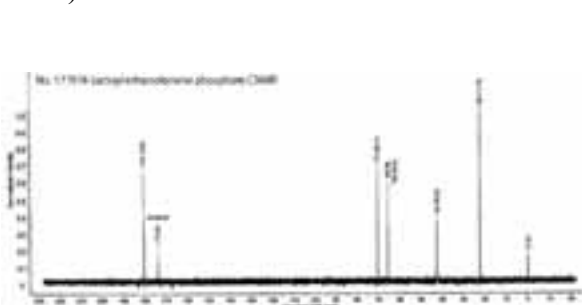
1774 N-Lactoyl ethanolamine (IR)



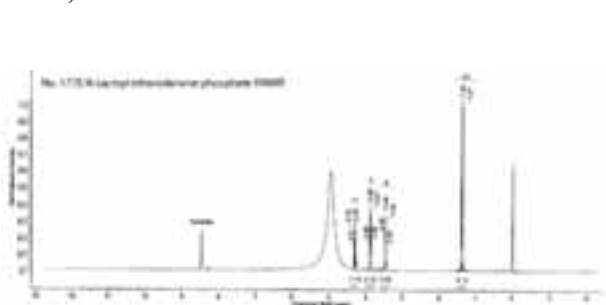
1774 N-Lactoyl ethanolamine (MS)



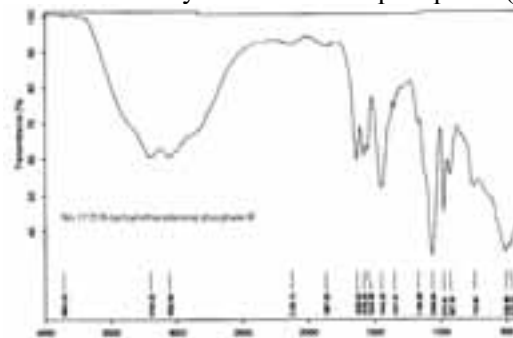
1775 N-Lactoyl ethanolamine phosphate (13C-NMR)



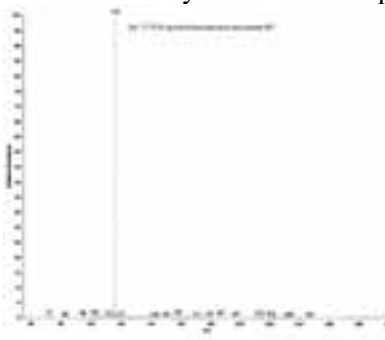
1775 N-Lactoyl ethanolamine phosphate (1H-NMR)



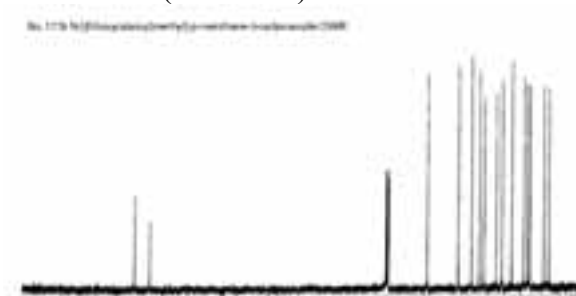
1775 N-Lactoyl ethanolamine phosphate (IR)



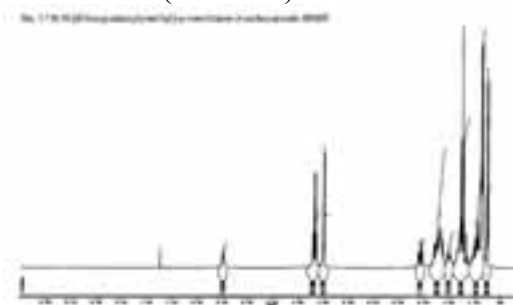
1775 N-Lactoyl ethanolamine phosphate (MS)



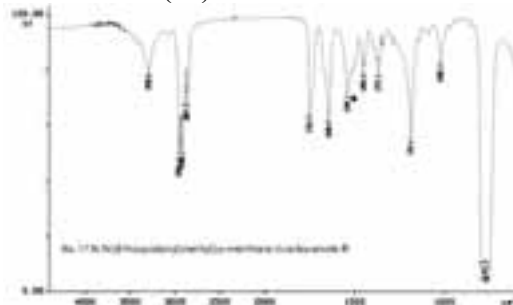
1776 N-[(Ethoxycarbonyl)methyl]-p-menthane-3-carboxamide (13C-NMR)



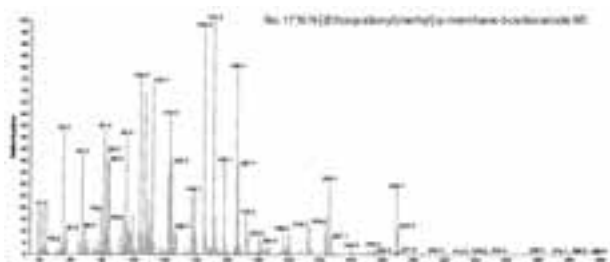
1776 N-[(Ethoxycarbonyl)methyl]-p-menthane-3-carboxamide (1H-NMR)



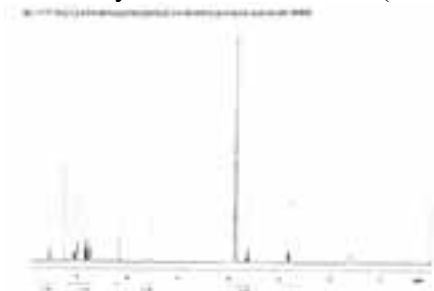
1776 N-[(Ethoxycarbonyl)methyl]-p-menthane-3-carboxamide (IR)



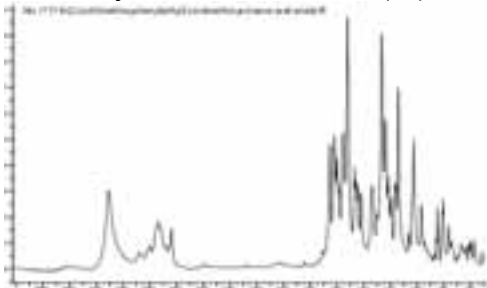
1776 N-[(Ethoxycarbonylmethyl)-p-menthane-3-carboxamide (MS)



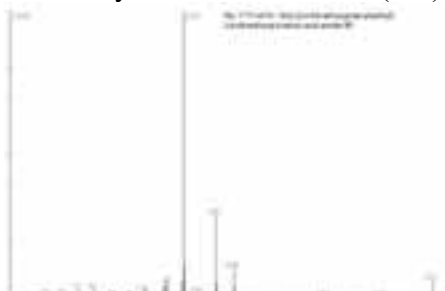
1777 N-[2-(3,4-Dimethoxyphenyl)ethyl]-3,4-dimethoxycinnamic acid amide (1H-NMR)



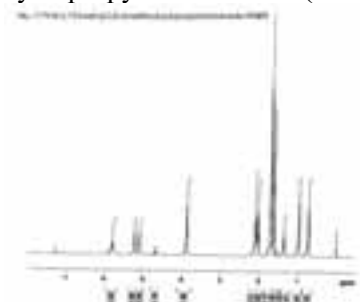
1777 N-[2-(3,4-Dimethoxyphenyl)ethyl]-3,4-dimethoxycinnamic acid amide (IR)



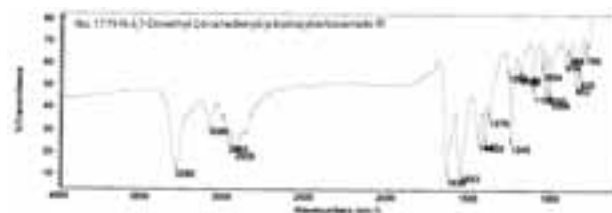
1777 N-[2-(3,4-Dimethoxyphenyl)ethyl]-3,4-dimethoxycinnamic acid amide (MS)



1779 N-3,7-Dimethyl-2,6-octadienyl cyclopropylcarboxamide (1H-NMR)



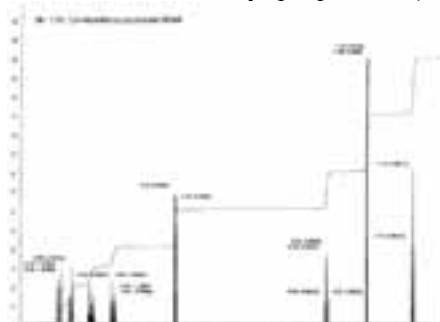
1779 N-3,7-Dimethyl-2,6-octadienyl cyclopropylcarboxamide (IR)



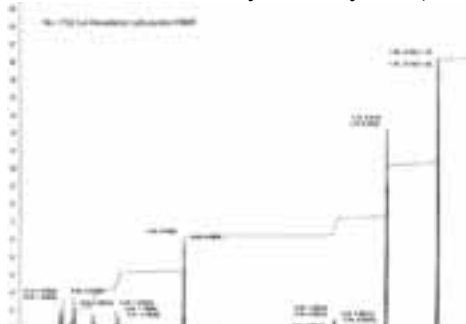
1780 2,4-Hexadienyl acetate (1H-NMR)



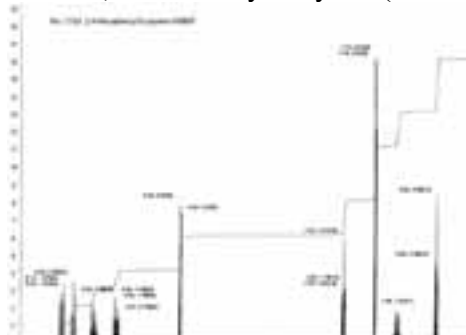
1781 2,4-Hexadienyl propionate (1H-NMR)



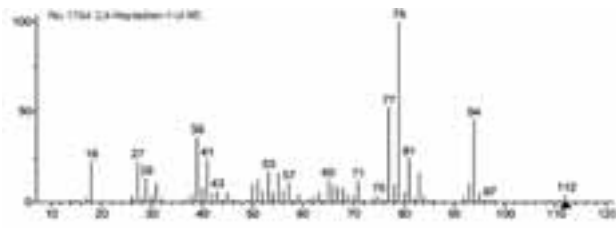
1782 2,4-Hexadienyl isobutyrate (1H-NMR)



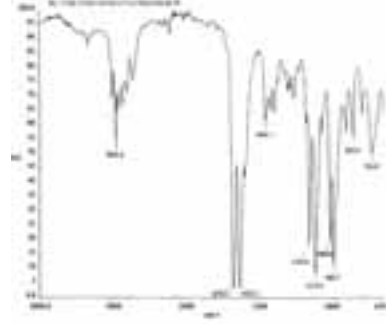
1783 2,4-Hexadienyl butyrate (1H-NMR)



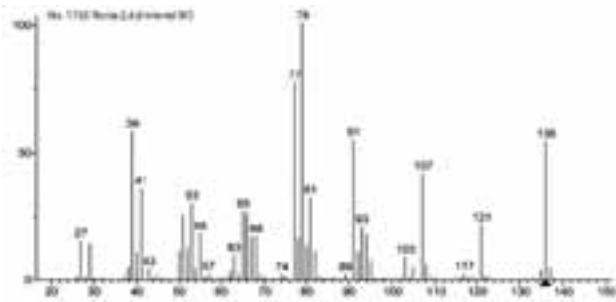
1784 2,4-Heptadien-1-ol (MS)



1786 2,4,7-Decatrienal (IR)



1785 Nona-2,4,6-trienal (MS)



Index: Specifications of certain flavouring agents

Name	Page	Name	Page	Name	Page
Acetaldehyde cyclic propylene acetal	92	1,1-Dimethoxydodecane	95	Ethyl 2-hydroxy-2-methylbutyrate	84
Acetaldehyde di-cis-3-hexenyl acetal	95	1,1-Dimethoxy-trans-2-hexene	93	Ethyl 2-hydroxy-3-methylpentanoate	84
Acetaldehyde diisoamyl acetal	93	1,1-Dimethoxyhex-2(E)-ene	93	Ethyl 2-hydroxy-3-methylvalerate	84
Acetaldehyde hexyl isoamyl acetal	93	1,1-Dimethoxynonane	95	Ethyl maltol	79
Acetaldehyde 1,3-octanediol acetal	95	N-[(2,4-Dimethoxyphenyl)methyl]-N'-[2-(pyridinyl)ethyl]ethanediamide	98	Ethyl mercaptan	85
6-Acetoxydihydrotheaspirane	84	N-[2-(3,4-Dimethoxyphenyl)ethyl]-3,4-dimethoxycinnamic acid amide	100	Ethyl methyl disulfide	89
1-Acetoxy-1ethoxyethane	93	Dimethyl benzyl carbonyl acetate	85	Ethyl 3-octenoate	82
5-Acetoxyhexanoic acid methyl ester	93	Dimethyl benzyl carbonyl butyrate	86	Ethyl oct-3-enoate	82
3-Acetoxy-2-methyl butyric acid ethyl ester	92	Dimethyl benzyl carbonyl formate	85	Ethyl 4-pentenoate	80
Acetyl thiazoline-2	97	Dimethyl p-tolyl carbinol	85	Ethyl propyl disulfide	90
5-Acetyl-2,3-dihydro-1,4-thiazine	98	2,5-Dimethyl-3-acetylfuran	79	Ethyl propyl trisulfide	90
2-Acetyl-4,5-dihydrothiazole	97	2,4-Dimethyl-1-aza-3,5-dithiabicyclo[4.3.0]nonane	98	5-Ethyl-2,5-dihydro-4-methyl-2-(1-methylpropyl)-thiazole	97
3-Acetyl-2,5-dimethylfuran	79	alpha, alpha-Dimethylbenzyl isobutyrate	85	5-Ethyl-2,5-dihydro-4-methyl-2-(2-methylpropyl)-thiazole	97
N-Acetylglycin-thioethyl ester	88	alpha, alpha-Dimethylbenzyl 2-methylpropanoate	85	1-Ethyldisulfanyl-butane	90
2-Acetyl-2-thiazoline	97	2,4-Dimethyl-1,3-dioxolane	92	1-Ethyldisulfanyl-propane	90
N-Acetylthioglycine, S-Ethyl ester	88	2,6-Dimethyl-5-heptenal propyleneglycol acetal	94	2-Ethyl-3-hydroxy-4H-pyran-4-one	79
Allyl butanethioate	88	2-(1,5-Dimethyl-4-hexenyl)-4-methyl-1,3-dioxolane	94	2-Ethyl-3-hydroxy-4-pyrone	79
Allyl propyl disulfide	90	N-3,7-Dimethyl-2,6-octadienyl	100	cis- and trans-5-Ethyl-4-methyl-2-(1-methylpropyl)-thiazoline	97
Allyl thiohexanoate	88	cyclopropylcarboxamide	100	cis- and trans-5-Ethyl-4-methyl-2-(2-methylpropyl)-thiazoline	97
Allylacetic acid methyl ester	80	N-[(2E)-3,7-Dimethyl-2,6-octadienyl]-cyclopropanecarboxamide	100	2-Ethylpyromeconic acid	79
S-Allylcysteine	92	4,5-Dimethyl-2-pentyl-1,3-dioxolane	94	3-(Ethylthio)butanol	91
S-Allyl-L-cysteine	92	alpha, alpha-Dimethylphenethanol	84	N-Gluconyl ethanalamine	99
2-(Allylsulfanyl)-1-heptene hydrate	88	alpha, alpha-Dimethylphenethyl acetate	85	N-Gluconyl ethanalamine phosphate	99
(2R)-3-(Allylthio)-2-aminopropanoic acid	92	1,1-Dimethyl-2-phenetyl acetate	85	2,4-Heptadien-1-ol	100
(R)-Allylthio-2-aminopropanoic acid	92	alpha, alpha-Dimethylphenethyl alcohol	84	Heptanal, cyclic propylene acetal	94
(2R)-2-Amino-3-(prop-2-en-1-ylsulfanyl)propanoic acid	92	alpha, alpha-Dimethylphenethyl butyrate	85	Heptanal propyleneglycol acetal	94
4-Aminobutyric acid	99	alpha, alpha-Dimethylphenethyl formate	85	2-Heptanethiol	86
Amyl hydrosulfide	86	2,4-Dimethyl(4H)pyrrolidino[1,2e]-1,3,5-dithiazine	98	Heptane-1-thiol	86
Amyl mercaptan	86	Dimethylpyruvic acid	78	Heptane-2-thiol	86
Amyl methyl disulfide	90	2,4-Dimethyltetrahydropyrrolo[2,1-d][1,3,5]-dithiazine	98	3-Heptanethiol, 1-methoxy-	88
Amyl sulfhydrate	86	2,5-Dimethylthiazole	97	1-Heptanol, 3-mercapto-, 1-acetate	93
Benzenepropanoic acid, alpha-oxo, sodium salt	78	Dimethyl p-tolyl carbinol	84	N-Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide	98
Benzyl dimethyl carbinol	84	2,4-Dipentyl-1,3-dioxane	94	2-Heptene-1-carboxylic acid	81
Benzyl dimethyl carbinol butyrate	86	3,4-Dithiaheptane	90	1-Heptene,2-(2-propenylthio)-monohydrate	89
Benzyl dimethyl carbonyl acetate	85	2,5-Dithiahexane	91	Heptyl mercaptan	86
Benzyl dimethyl carbonyl formate	85	3,4-Dithiahexane	90	2-Heptyl-4-methyl-1,3-dioxolane	95
2-Benzyl-2-propanol	84	2,3-Dithiaoctane	90	2,4-Hexadienyl acetate	100
2-Benzyl-2-propyl acetate	85	3,4-Dithiaoctane	90	2,4-Hexadienyl butyrate	100
2-Benzyl-2-propyl butyrate	86	4,5-Dithia-1-octene	90	2,4-Hexadienyl isobutyrate	100
2-Benzyl-2-propyl formate	85	2,3-Dithiapentane	89	2,4-Hexadienyl propionate	100
Butanoic acid, 3-methyl-2-oxo	78	Dodecanal dimethyl acetal	95	Hexanal butane-2,3-diol acetal	94
Butanoic acid, 3-methyl-2-oxo, sodium salt	78	Dodecane, 1,1-dimethoxy-	98	Hexanal dihexyl acetal	94
1-Butanol-2-one	92	4-Dodecanal, (4Z)-	82	Hexanal hexyl isoamyl acetal	94
Butyl ethyl disulfide	90	cis-Dodec-4-en-1-al	82	Hexanal octane-1,3-diol acetal	94
2-Butyl-4-methyl-1,3-dioxolane	94	11-Dodecenoic acid	82	4-Hexenal trans	80
p-Cymen-8-ol	84	Elialdehyde	83	E-4-Hexenal	80
Decanal propyleneglycol acetal	95	2,8-Epithio-cis-p-menthane	88	Hex-4-enal	80
2,4,7-Decatrienal	100	2,8-Epithio-p-menthane	88	trans-4-Hexenal	80
Deca-2,4,7-trienal	100	1,1-Ethanedithiol	86	trans-Hex-4-enal	80
4-Decen-1-ol, (4Z)-	82	Ethane-1,1-dithiol	85	trans-2-Hexenal dimethyl acetal	93
cis-4-Decenol	82	Ethanethioic acid	87	5-Hexene-1-ol	81
2-Decyl-4-methyl-1,3-dioxolane	95	Ethanethiol	85	3-Hexenoic acid, ethyl ester, (3Z)-	81
1,1-Dibutoxypentane	93	4-Ethoxycarbonylbut-1-ene	80	3-Hexenoic acid, methyl ester	81
1,1-Diethoxyisopentane	93	N-[(Ethoxycarbonyl)methyl]-p-menthane-3-carboxamide	99	1-Hexen-6-ol	81
1,1-Diethoxy-3-methylbutane	93	Ethoxyethyl acetate	93	3-Hexen-1-ol, (3E)-	80
Diethyl disulfide	90	Ethyl 3-acetoxy-2-methylbutyrate	92	5-Hexen-1-ol	81
Diethyl trisulfide	90	S-Ethyl 2-acetyl amino ethanethioate	88	5-Hexenol	81
3,6-Diethyl-1,2,4,5-tetrathiane, mixture with	89	S-Ethyl 2-acetyl amino ethanethiolate	88	beta-gamma-hexenol	80
3,5-diethyl-1,2,4-trithiolane		cis- and trans-Ethyl 2,4-dimethyl-1,3-dioxolane-2-acetate	92	trans-3-Hexenol	80
3,5-Diethyl-1,2,4-trithiolane	89	Ethyl disulfide	90	trans-3-Hexen-1-ol	80
1-(4,5-Dihydro-1,3-thiazol-2-yl)-1-propanone	97	Ethyl (Z)-3-hexenoate	81	1,1-bis[3(Z)-Hexenyloxy]propane	95
Dihydroxyacetone dimer	92	Ethyl cis-3-hexenoate	81	Hexyl 3-mercaptobutanoate	91
2,5-Dihydroxy-1,4-dioxane-2,5-dimethanol	92	Ethyl hydroxymethyl ketone	92	Hexyl 3-mercaptobutyrate	91
Diisoamyl thiomalate	87			2-Hexyl-4,5-dimethyl-1,3-dioxolane	92
Diisopentyl thiomalate	87			2-Hexyl-4-methyl-1,3-dioxolane	94
1,1-Di-isopentylloxyethane	93			1,1-bis(Hexyloxy)hexane	94
Diisopropyl methyl carbinol	83			1-Hexyloxy-1-(3-methylbutyl)oxyhexane	94
Dimercaptomethane	86				
1,1-Di(3-methylbutoxy)ethane	93				
Di(3-methylbutyl) but-2(cis)-enebis(thioate)	87				
N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide	98				

Name	Page	Name	Page	Name	Page
1-Hexyloxy-1-(3-methylbutyl)oxypropane	93	Methyldisulfanyl-ethane	89	Mixture of 3,6-Diethyl-1,2,4,5-tetrathiane and	89
2-Hexylthiophene	98	1-Methyldisulfanyl-pentane	90	3,5-diethyl-1,2,4-trithiolane	
1-Hydroxy-2-butanone	92	Methyl (Z)-3-hexenoate	81	Nerolidol	83
1-Hydroxybutan-2-one	92	Methyl cis-3-hexenoate	81	3,7-Nonadien-2-ol, 2,4,8-trimethyl-	84
6-Hydroxydihydrotheaspirane	84	Methyl isopentyl disulfide	90	Nonanal dimethyl acetal	95
N-(2-Hydroxyethyl)galactonamide	99	Methyl 3-mercaptoputanoate	87	Nonanal propyleneglycol acetal	95
6-Hydroxy-1-hexene	81	Methyl 3-methylbutyl disulfide	90	Nonane, 1,1-dimethoxy-	97
2-Hydroxy-N-(2-hydroxyethyl)propanamide	99	[1R-(1alpha,2beta,5alpha)]-N-[5-Methyl-2-(1-	99	Nona-2,4,6-trienal	100
4-Hydroxymethyl-2-(2-methylpropyl)-1,3-	94	methylethyl)cyclohexyl]carbonyl glycine ethyl		trans-4-Nonenal	83
dioxolane and 5-Hydroxy-2-(methylpropyl)-		ester		2-Nonyl-4-methyl-1,3-dioxolane	95
1,3-dioxane		Methyl (methylthio)acetate	89	9-Octadecenal	83
2-Hydroxy-2-methyl-1-phenylpropane	84	Methyl 2-(methylthio)acetate	89	9-cis-Octadecenol	82
5-Hydroxy-2-(2-methylpropyl)-1,3-dioxane	96	Methyl 3-(methylthio)butanoate	89	cis-9-Octadecen-1-ol	82
3-Hydroxy-2-methyl-4-pyrone	79	Methyl 5(Z)-octenoate	81	cis-9-Octadecenol	82
1-(3-Hydroxy-5-methyl-2-thienyl)ethanone	96	Methyl (Z)-5-octenoate	81	cis-delta-9-Octadecenol	82
2-Hydroxy-N-[2-	99	Methyl 4-pentenoate	80	cis-9-Octadecen-1-yl acetate	82
(phosphonoxy)ethyl]propanamide		2-Methyl-4-pentyl-1,3-dioxane	97	cis-9-Octadecenyl acetate	82
6-Hydroxy-2,6,10,10-tetramethyl-1-	84	S-Methyl propanethioate	89	cis-9-Octadecenyl alcohol	82
oxaspiro[4.5]decane		Methyl 10-undecenoate	83	Octadecenyl aldehyde	83
INS No. 636	79	Methyl vinyl homogeranyl carbinol	83	Octanal propyleneglycol acetal	95
INS No. 637	79	3-Methylbutanal diethyl acetal	95	3-Octenoic acid	81
Isobutanal propyleneglycol acetal	95	2-Methylbut-2-en-1-ol	80	4(E)-Octenoic acid	81
Isobutyl 3-methylthiobutyrate	87	Methyldisulfanyl-ethane	89	4-Octenoic acid, (E)-	81
Isobutyl 3-(methylthio)butyrate	87	1-Methyldisulfanyl-pentane	90	5(Z)-Octenoic acid	82
Isobutyl 10-undecenoate	82	1,2-bis(Methylmercapto)ethane	91	cis-5-Octenoic acid	82
2-Isobutyl-4-methyl-1,3-dioxolane	93	3-Methyl-1-[1-(3-methyl-butoxy)-ethoxy]-	93	delta-3-Octenoic acid	81
2-Isobutyl-4-methyl-5-ethylthiazoline	97	butane		trans-4-Octenoic acid	81
3-Isopropenylpentanedioic acid	80	4-Methyl-2-(1-methylethyl)-1,3-dioxolane	95	(Z)-4-Octen-1-ol	81
S-Isopropyl 3-methylbut-2-enethioate	88	4-Methyl-2-(2-methylpropyl)-1,3-dioxolane	93	cis-4-Octenol	81
2-Isopropyl-4-methyl-1,3-dioxolane	95	2-Methyl-1-methylthio-2-butene	88	(Z)-3-Octenyl propanoate	81
S-isopropyl 3-methylthiocrotonate	88	4-Methyl-2-nonyl-1,3-dioxolane	95	2-Octyl-4-methyl-1,3-dioxolane	95
S-Isopropyl thiosenecioate	88	4-Methyl-2-octyl-1,3-dioxolane	95	Olealdehyde	83
Isovaleraldehyde diethyl acetal	93	3-Methyl-2-oxobutanoic acid	78	Oleic aldehyde	83
Isovaleraldehyde glyceryl acetal	94	3-Methyl-2-oxobutanoic acid, sodium salt	78	Oleyl acetate	82
Isovaleraldehyde propyleneglycol acetal	93	3-Methyl-2-oxobutyric acid	78	1-Oxaspiro[4.5]decan-6-ol, 2,6,10,10-	84
N-Lactoyl ethanolamine	99	3-Methyl-2-oxopentanoic acid	78	tetramethyl-, acetate, (2R,5S,6S)-rel-	
N-Lactoyl ethanolamine phosphate	99	4-Methyl-2-oxopentanoic acid	78	1-Oxaspiro[4.5]decan-6-ol, 2,6,10,10-	84
Larixinic acid	79	3-Methyl-2-oxopentanoic acid, sodium salt	78	tetramethyl-, [2S-[2alpha,5alpha-(R)]]-	
Lauryl aldehyde dimethyl acetal	95	4-Methyl-2-oxopentanoic acid, sodium salt	78	2-Oxo-1-butanol	92
Leaf alcohol	80	2-Methyl-4-oxo-4H-pyran-3-yl isobutyrate	79	2-Oxoisovaleric acid	78
Maltol	79	3-Methyl-2-oxovaleric acid	78	Oxopentanoate, 4-methyl-2-oxo, sodium salt	78
Maltyl isobutyrate	79	4-Methyl-2-oxovaleric acid	78	2-Oxo-3-phenylpropionic acid, sodium salt	78
Maltyl 2-methylpropanoate	79	2-Methyl-4-pentyl-1,3-dioxane	95	Pelargonaldehyde dimethyl acetal	95
2-Mercaptoanisole	86	1-Methyl-1-(2-phenylethyl) isobutyrate	85	Pelargonic aldehyde dimethyl acetal	95
3-Mercaptobutanoic acid hexyl ester	91	2-(4-Methylphenyl)-2-propanol	84	Pentane-1-thiol	86
3-Mercaptoethyl acetate	91	2-Methyl-1-phenylpropan-2-ol	84	1-Pentanethiol	86
3-Mercapto-1-butyl acetate	91	2-Methyl-1-phenyl-2-propyl acetate	85	Pentanoic acid, 3-methyl-2-oxo, sodium salt	78
3-Mercaptoheptyl acetate	91	2-Methyl-1-phenyl-2-propyl butyrate	86	4-Pentenal	80
cis- and trans-Mercapto-p-menthan-3-one	87	2-Nethyl-1-phenyl-2-propyl formate	85	Pentyl mercaptan	86
1-Mercapto-p-menthane-3-one	87	2-Methyl-1-phenyl-2-propyl isobutyrate	85	Phenyl dimethyl carbinyl isobutyrate	85
3-Mercapto-3-methylbutyl acetate	91	S-Methyl propanethioate	88	1-Phenylethanethiol	86
3-Mercapto-3-methyl-1-butyl acetate	91	2-Methylpropyl 3-(methylthio) butanoate	87	1-Phenylethylmercaptan	86
4-Mercapto-4-methyl-2-pentanol	86	2-Methylpropyl 3-(methylthio) butyrate	89	Phenylethyl methyl ethyl carbinol	84
4-Mercapto-2-pentanone	87	2-Methyl-4H-pyran-4-one-3-yl 2-	79	1-Phenylethylthiol	86
4-Mercapto-2-pentanone	87	methylpropanoate		1-Phenyl-3-methyl-3-pentanol	84
bis(1-Mercaptopropyl)sulfide	91	2-Methylpyromeconic acid	79	2-Phenylpropan-2-yl isobutyrate	85
Methane, thiobis(methylthio)-	89	2-Methyl-4-pyran-3-yl 2-methylpropanoate	79	N-[2-(Phosphonoxy)ethyl]galactonamide	99
Methanedithiol	86	3-Methyl-3-sulfanylbutyl acetate	91	2-Propenamide, 3-(3,4-dimethoxyphenyl)-N-	100
Methanethiol, (methylthio)-	88	3-Methylsulfanyl-butyric acid methyl ester	89	[2-(3,4-dimethoxyphenyl)ethyl]-	
Methionyl butyrate	86	2-(4-Methyl-5-thiazolyl)ethyl butanoate	96	S-2-Propenylcysteine	92
o-Methoxythiophenol	86	2-(4-Methyl-5-thiazolyl)ethyl decanoate	97	Propionyl carbinol	92
o-Methoxybenzenethiol	86	2-(5-Methyl-4-thiazolyl)ethyl formate	96	2-Propionyl-2-thiazoline	97
2-Methoxybenzene-1-thiol	86	2-(4-Methyl-5-thiazolyl)ethyl hexanoate	96	Propyl allyl disulfide	90
1,1'-bis(Methoxy)dodecane	95	2-(4-Methyl-5-thiazolyl)ethyl isobutyrate	96	N-(1-Propylbutyl)-1,3-benzodioxole-5-	98
N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(5-	98	2-(4-Methyl-5-thiazolyl)ethyl octanoate	96	carboxamide	
methylpyridin-2-yl)ethyl)oxalamide		2-(4-Methyl-5-thiazolyl)ethyl propionate	96	Propyl 2-mercaptopropionate	86
N1-(2-Methoxy-4-methylbenzyl)-N2-(2-	99	(Methylthio)acetic acid methyl ester	89	Propyl propane thiosulfonate	91
(pyridin-2-yl)ethyl)oxalamide		3-(Methylthio) butyric acid methyl ester	89	Propylene acetal	92
N-[(2-Methoxy-4-methylphenyl)methyl]-N'-[2-	98	3-(Methylthio)-2-butanone	90	Pyroolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-	98
(5-methyl-2-pyridinyl)ethyl]ethanediamide		1,2-bis(Methylthio)ethane	91	dithiazine	
N-[(2-Methoxy-4-methylphenyl)methyl]-N'-[2-	99	3-(Methylthio)heptanal	89	Rubenamin	100
(pyridinyl)ethyl]ethanediamide		(Methylthio)methanethiol	87	Sodium alpha-ketoisovalerate	78
1-Methoxy-3-heptanethiol	87	Methylthiomethylmercaptan	87	Sodium 4-methyl-2-ketopentanoate	78
2-Methoxythiophenol	86	3-(Methylthio)methylthiophene	98	Sodium 4-methyl-2-oxo-pentanoate	78
Methyl 5-acetoxyhexanoate	93	4-(Methylthio)-2-pentanone	89	Sodium 3-methyl-2-oxovalerate	78
Methyl allylacetate	80	3-(Methylthio)propyl butyrate	86	Sodium 4-methyl-2-oxovalerate	78
bis(3-Methylbutyl)mercaptosuccinate	87			Sodium 3-methyl-2-oxobutyrate	78

Name	Page	Name	Page	Name	Page
Sorbyl acetate	100	Thioguaiacol	86	Trisulfide, diethyl	92
Sorbyl butyrate	100	2-p-Tolyl-2-propanol	84	Trisulfide, ethyl propyl	91
Sorbyl isobutyrate	100	p-alpha,alpha-Trimethylbenzyl alcohol	84	2,4,6-Trithiaheptane	88
Sorbyl propionate	100	2,4,5-Trimethyl-2,5-dihydrooxazole	79	3,4,5-Trithiaheptane	90
Tangerinal	82	3,7-11-Trimethyl-1,6-10-dodecatrien-3-ol	83	3,4,5-Trithianonane	90
8-Tetradecenal, (Z)-	83	2,4,5-Trimethyl-delta-oxazoline	79	Undecanal propyleneglycol acetal	95
Tetrahydro-2,4-dimethyl-4H-pyrrolo[2,1-d]- 1,3,5-dithiazine	100	Trimethyl-delta-oxazoline	79	Valeraldehyde dibutyl acetal	93
6-Thiabicyclo[3.2.1]octane, 4,7,7-trimethyl-	90	(E)- and (Z)-2,4,8-Trimethyl-3,7-nonadien-2- ol	83	Valeraldehyde propyleneglycol acetal	94
Thioacetic acid	87	2,3,4-Trimethyl-3-pentanol	83	Valeric acid, 3-methyl-2-oxo, sodium salt	78
3-Thiobutyl acetate	91	4,7,7-Trimethyl-6-thiabicyclo[3.2.1]octane	88	Valeric acid, 4-methyl-2-oxo, sodium salt	78

Annex 1: Summary of recommendations from the 68th JECFA and further information required

Toxicological recommendations and information on specifications

1. Food additives and ingredients evaluated toxicologically or assessed for dietary exposure

Food additive	Specifications ^a	Acceptable daily intake (ADI) and other toxicological recommendations
Acidified sodium chlorite (ASC)		<p>The available toxicological data were sufficient to assess the safety of ASC by setting ADIs for chlorite and chlorate.</p> <p>Chlorite: ADI of 0.03 mg/kg bw per day</p> <p>Chlorate: ADI of 0.01 mg/kg bw per day.</p> <p>New specifications were prepared for sodium chlorite and one of the acids used in the preparation of ASC, sodium hydrogen sulfate.</p>
Asparaginase from <i>Aspergillus oryzae</i> expressed in <i>Aspergillus oryzae</i>	N	ADI “not specified” ^b when used in the applications specified and in accordance with good manufacturing practice.
Carrageenan and Processed Eucheuma Seaweed	R	<p>The group ADI “not specified”^b for the sum of carrageenan and processed eucheuma seaweed was maintained for food additive uses in foods other than infant formula.</p> <p>The Committee was of the view that based on the information available, it is inadvisable to use carrageenan or processed eucheuma seaweed in infant formulas.</p>
	R	
Cyclotetraglucose and cyclotetraglucose syrup (listed on draft agenda as cyclotetraose)	N N,T	A temporary ADI “not specified” ^b was allocated for cyclotetraglucose and cyclotetraglucose syrup pending submission of data on the identity of the bacterial strain used to produce the 6-GT/IMT enzyme preparation and evidence of its lack of pathogenicity and toxigenicity. The specifications for cyclotetraglucose syrup were made tentative pending information on the total saccharide content, the unidentified fraction and test methods.
Isoamylase from <i>Pseudomonas amyloclavata</i>	N	ADI “not specified” ^b when used in the applications specified and in accordance with good manufacturing practice.
Magnesium sulfate	R	ADI “not specified” ^b
Phospholipase A1 from <i>Fusarium venetatum</i> produced by <i>Aspergillus oryzae</i>	S	ADI “not specified” ^b when used in the applications specified and in accordance with good manufacturing practice.
Sodium iron(III) ethylenediaminetetraacetic acid (EDTA)	S	Sodium iron EDTA is suitable for use as a source of iron for food fortification to fulfil nutritional iron requirements, provided that the total intake of iron from all food sources including contaminants does not exceed the PMTDI of 0.8 mg/kg bw. Total intake of EDTA should not exceed acceptable levels, also taking into account the intake of EDTA from the food additive use of other EDTA compounds. An ADI of 0-2.5 mg/kg bw was previously established for the calcium disodium and disodium salts of EDTA, equivalent to up to 1.9 mg/kg bw EDTA.

Food additive	Specifications ^a	Acceptable daily intake (ADI) and other toxicological recommendations
Steviol glycosides	R	The temporary ADI of 0–2 mg/kg bw for steviol glycosides, expressed as steviol was extended until 2008, pending submission of the results of the ongoing studies. The Committee considered that the newly available data did not raise additional concerns regarding the safety of steviol glycosides, but that the results of ongoing clinical studies, which more closely address the requirements specified at the sixty-third meeting, would be essential to its evaluation. The specifications were revised and the tentative assignment was removed. The method of assay includes a minimum requirement of 95% of the total of 7 steviol glycosides.

^a N: new specifications prepared; R: existing specifications revised; S: existing specifications maintained; T: tentative specifications.

^b ADI 'not specified' is used to refer to a food substance of very low toxicity which, on the basis of the available data (chemical, biochemical, toxicological and other) and the total dietary intake of the substance arising from its use at the levels necessary to achieve the desired effects and from its acceptable background levels in food, does not, in the opinion of the Committee, represent a hazard to health. For that reason, and for the reasons stated in the individual evaluations, the establishment of an ADI expressed in numerical form is not deemed necessary. An additive meeting this criterion must be used within the bounds of good manufacturing practice, i.e. it should be technologically efficacious and should be used at the lowest level necessary to achieve this effect, it should not conceal food of inferior quality or adulterated food, and it should not create a nutritional imbalance.

2. Food additives, including flavouring agents, considered for specifications only

Food Additive	Specifications ^a
Anisyl acetone	W
Furfural	W
Ethyl maltol	R
Maltol	R
Nisin preparation	R
Pectins	R
Polyvinyl alcohol	R
Sucrose esters of fatty acids	R
Zeaxanthin-rich extract from <i>Tagetes erecta</i>	W

Flavouring agents	JECFA No.	Specifications ^a
3-Acetyl-2,5,-dimethylfuran	1506	R
Ethyl maltol	1481	R
Maltol	1480	R
Maltol isobutyrate	1482	R
3-Methyl-2-oxobutanoic acid	631	R
3-Methyl-2-oxopentanoic acid	632	R
4-Methyl-2-oxopentanoic acid	633	R
Sodium 3-Methyl-2-oxobutanoate	631.1	R
Sodium 3-Methyl-2-oxopentanoate	632.1	R
Sodium 4-Methyl-2-oxopentanoate	633.1	R
Sodium 2-oxo-3-phenylpropionate	1479	R
2,4,5-Trimethyl-delta-oxazolin	1559	R

^aR: existing specifications revised; W: existing specifications withdrawn.

3. Food contaminants evaluated toxicologically or assessed for dietary exposure

Food Contaminant	Tolerable intakes and other toxicological recommendations
<p>Aflatoxins</p> <p>(Intake assessment from pistachios, hazelnuts, almonds, Brazil nuts and dried figs, impact of various Maximum Levels, MLs)</p>	<p>The Committee decided to base the assessment of the impact of different MLs for aflatoxin (AFL) exposure on data provided by producing countries, noting that these better represent the materials in commerce and result in a robust estimate of AFL dietary exposure from the tree nuts.</p> <p>Consumption of almonds, Brazil nuts, hazelnuts, pistachios, and dried figs contributes greater than 5% of the total AFL dietary exposure in only five of the 13 GEMS/Food cluster diets (Clusters B, C, D, E and M). If fully enforced, an ML at 20 µg/kg in hazelnuts, almonds, pistachios, Brazil nuts, and dried figs would only have an impact on the relative contribution to AFL dietary exposure in these clusters, including high-level consumers of tree nuts. This contribution is due solely to the elevated AFL level in pistachios. For tree nuts other than pistachios, the presence of an ML has no effect on AFL dietary exposure. Moreover, the Committee concluded that enforcing an ML of 15, 10, 8, or 4 µg/kg, would have little further impact on the overall dietary exposure to AFL in all five of the highest exposed population groups compared to setting an ML of 20 µg/kg.</p> <p>Regarding dried figs, the Committee concluded that whatever the hypothetical ML scenario applied (no ML, 4, 8, 10, 15, or 20 µg/kg) there would be no impact on the overall dietary exposure to AFL.</p> <p>The Committee noted that the reduction of AFL dietary exposure is an important public health goal; particularly in populations who consume high levels of any potentially AFL contaminated food.</p>
<p>Ochratoxin A (OTA)</p>	<p>The previous PTWI of 100 ng/kg bw was retained.</p> <p>The new data, including data on mode of action of OTA in the kidney, do not indicate any reason to modify the previous risk assessment approach taken by JECFA.</p> <p>The current estimate of overall dietary exposure to ochratoxin A from cereals, based mainly on European data, is about 8–17 ng/kg bw per week, based on processed cereals, compared with 25 ng/kg bw per week in the previous evaluation, based on raw cereals. The current estimates are well below the PTWI.</p> <p>Contamination levels in the majority of raw cereal samples were below 5 µg/kg. Due to the very small number of samples contaminated above the highest proposed limit of 20 µg/kg, such an ML would have very limited impact compared with no ML. The Committee concluded that the use of an ML of 5 or 20 µg/kg would be unlikely to have an impact on dietary exposure to ochratoxin A. The Committee was unable to reach a conclusion regarding the situation in developing countries, due to the lack of adequate data to consider.</p>

4. Flavouring agents evaluated using the Procedure for the Safety Evaluation of Flavouring Agents

A. Linear and branched-chain aliphatic, unsaturated, unconjugated alcohols, aldehydes, acids and related esters

Flavouring agent	JECFA No.	Specifications ^a	Conclusions based on current estimated intake
Ethyl-2-methyl-3,4-pentadienoate	353	S	No safety concern
Methyl 4-pentenoate	1616	N	No safety concern
2-Methylbut-2-en-1-ol	1617	N	No safety concern
Ethyl 4-pentenoate	1618	N	No safety concern
4-Pentenal	1619	N	No safety concern
3-Isopropenylpentanedioic acid	1620	N	No safety concern
<i>trans</i> -3-Hexenol	1621	N	No safety concern
<i>trans</i> -4-Hexenal	1622	N	No safety concern
5-Hexenol	1623	N	No safety concern
Methyl (<i>Z</i>)-3-hexenoate	1624	N	No safety concern
<i>cis</i> -4-Octenol	1625	N	No safety concern
Ethyl (<i>Z</i>)-3-hexenoate	1626	N	No safety concern
3-Octenoic acid	1627	N	No safety concern
(<i>Z</i>)-3-Octenyl propionate	1628	N	No safety concern
<i>trans</i> -4-Octenoic acid	1629	N	No safety concern
Methyl (<i>Z</i>)-5-octenoate	1630	N	No safety concern
<i>cis</i> -5-Octenoic acid	1631	N	No safety concern
Ethyl 3-octenoate	1632	N	No safety concern
<i>cis</i> -4-Decenol	1633	N	No safety concern
Isobutyl 10-undecenoate	1634	N	No safety concern
11-Dodecenoic acid	1635	N	No safety concern
(<i>Z</i>)-4-Dodecenal	1636	N	No safety concern
<i>cis</i> -9-Octadecenol	1637	N	No safety concern
<i>cis</i> -9-Octadecenyl acetate	1638	N	No safety concern
Methyl 10-undecenoate	1639	N	No safety concern
(<i>Z</i>)-8-Tetradecenal	1640	N	No safety concern
9-Octadecenal	1641	N	No safety concern
(<i>E</i>)-4-Nonenal	1642	N	No safety concern

^aN: new specifications prepared; S: Specifications maintained.

B. Aliphatic acyclic and alicyclic terpenoid tertiary alcohols and structurally related substances

Flavouring agent	JECFA No.	Specifications ^a	Conclusions based on current estimated intake
Structural Class I			
2,3,4-Trimethyl-3-pentanol	1643	N	No safety concern
(+/-)-2,4,8-Trimethyl-7-nonen-2-ol	1644	N	No safety concern
(<i>E</i>)- and (<i>Z</i>)-2,4,8-Trimethyl-3,7-nonadien-2-ol	1645	N	No safety concern
Nerolidol	1646	N	No safety concern
1-Phenyl-3-methyl-3-pentanol	1649	N	No safety concern
<i>p</i> - <i>alpha, alpha</i> -Trimethylbenzyl alcohol	1650	N	No safety concern
(+/-)-Ethyl 2-hydroxy-2-methylbutyrate	1651	N	No safety concern
(+/-)-Ethyl 2-hydroxy-3-methylvalerate	1652	N	No safety concern
<i>alpha, alpha</i> -Dimethylphenethyl alcohol	1653	N	No safety concern
<i>alpha, alpha</i> -Dimethylphenethyl formate	1654	N	No safety concern
<i>alpha, alpha</i> -Dimethylphenethyl acetate	1655	N	No safety concern
<i>alpha, alpha</i> -Dimethylphenethyl butyrate	1656	N	No safety concern
<i>alpha, alpha</i> -Dimethylbenzyl isobutyrate	1657	N	No safety concern
Structural Class II			
6-Acetoxydihydrotheaspirane	1647	N	No safety concern
6-Hydroxydihydrotheaspirane	1648	N	No safety concern

^aN: new specifications prepared.

C. Simple aliphatic and aromatic sulfides and thiols

Flavouring agent	No.	Specifications ^a	Conclusions based on current estimated intake
Simple sulfides			
Structural Class I			
2-Methyl-1-methylthio-2-butene	1683	N	No safety concern
2,4,6-Trithiaheptane	1684	N	No safety concern
2,5-Dithiahexane	1707	N	No safety concern
Acyclic sulfides with oxidized and thiol side-chains			
Structural Class I			
Methionyl butyrate	1668	N	No safety concern
Methylthiomethylmercaptan	1675	N	No safety concern
(+/-)-Isobutyl 3-methylthiobutyrate	1677	N	No safety concern
3-(Methylthio)-2-butanone	1688	N	No safety concern
4-(Methylthio)-2-pentanone	1689	N	No safety concern
Methyl 3-(methylthio)butanoate	1690	N	No safety concern
Methyl (methylthio)acetate	1691	N	No safety concern
(+/-)-3-(Methylthio)heptanal	1692	N	No safety concern
(+/-)-3-(Ethylthio)butanol	1703	N	No safety concern
S-Allyl-L-cysteine	1710	N	No safety concern
Heterocyclic sulfides – Structural Class I			
(+/-)-2,8-Epithio- <i>cis-p</i> -menthane	1685	N	No safety concern
Simple thiols			
Structural Class I			
Ethanethiol	1659	N	No safety concern
1-Pentanethiol	1662	N	No safety concern
Heptane-1-thiol	1663	N	No safety concern
2-Heptanethiol	1664	N	No safety concern
Structural Class II			
(+/-)-1-Phenylethylmercaptan	1665	N	No safety concern
Thiols with oxidized side-chains			
Structural Class I			
Propyl 2-mercaptopropionate	1667	N	No safety concern
(+/-)-4-Mercapto-4-methyl-2-pentanol	1669	N	No safety concern
4-Mercapto-2-pentanone	1670	N	No safety concern
(S)-1-Methoxy-3-heptanethiol	1671	N	No safety concern
Methyl 3-mercaptobutanoate	1674	N	No safety concern
Hexyl 3-mercaptobutanoate	1704	N	No safety concern
(+/-)-3-Mercapto-1-butyl acetate	1705	N	No safety concern
3-Mercapto-3-methyl-1-butyl acetate	1706	N	No safety concern
3-Mercaptoheptyl acetate	1708	N	No safety concern
Structural Class II			
<i>cis</i> - and <i>trans</i> -Mercapto- <i>p</i> -menthan-3-one	1673	N	No safety concern
Structural Class III			
2-Mercaptoanisole	1666	N	No safety concern
Diisopentyl thiomalate	1672	N	No safety concern
Dithiols – Structural Class I			
Ethane-1,1-dithiol	1660	N	No safety concern
Dimercaptomethane	1661	N	No safety concern
<i>bis</i> (1-Mercaptopropyl)sulfide	1709	N	No safety concern
Simple disulfides			
Structural Class I			
Ethyl methyl disulfide	1693	N	No safety concern
Ethyl propyl disulfide	1694	N	No safety concern
Methyl isopentyl disulfide	1696	N	No safety concern

Flavouring agent	No.	Specifications ^a	Conclusions based on current estimated intake
Amyl methyl disulfide	1697	N	No safety concern
Butyl ethyl disulfide	1698	N	No safety concern
Diethyl disulfide	1699	N	No safety concern
Structural Class II			
Allyl propyl disulfide	1700	N	No safety concern
Trisulfides – Structural Class I			
Ethyl propyl trisulfide	1695	N	No safety concern
Diethyl trisulfide	1701	N	No safety concern
Heterocyclic disulfides – Structural Class II			
(+/-)-3,5-Diethyl-1,2,4-trithiolane	1686	N	No safety concern
Mixture of 3,6-diethyl-1,2,4,5-tetrathiane (approx. 55%) and 3,5-diethyl-1,2,4-trithiolane (approx. 45%)	1687	N	No safety concern
Thioesters and acids			
Structural Class I			
Thioacetic acid	1676	N	No safety concern
(S)-Methyl propanethioate	1678	N	No safety concern
(S)-Isopropyl 3-methylbut-2-enethioate	1679	N	No safety concern
Structural Class II			
Allyl thiohexanoate	1681	N	No safety concern
Structural Class III			
(S)-Ethyl 2-acetylaminoethanethioate	1680	N	No safety concern
Propyl propane thiosulfonate	1702	N	No safety concern

^aN: new specifications prepared.

D. Aliphatic acyclic diols, triols, and related substances

Flavouring agent	No.	Specifications ^a	Conclusions based on current intake
Structural Class I			
Dihydroxyacetone dimer	1716	N	No safety concern
1-Hydroxy-2-butanone	1717	N	No safety concern
Ethyl 3-acetoxy-2-methylbutyrate	1718	N	No safety concern
Methyl 5-acetoxyhexanoate	1719	N	No safety concern
Structural Class III			
2,4-Dimethyl-1,3-dioxolane	1711	N	No safety concern
2-Hexyl-4,5-dimethyl-1,3-dioxolane	1712	N	No safety concern
<i>cis</i> - and <i>trans</i> -Ethyl 2,4-dimethyl-1,3-dioxolane-2-acetate	1715	N	No safety concern

^aN: new specifications prepared.

Five substances in this group (listed as Nos. 1720, 1721 and 1723–1725 in the Call for data; they are various fatty acid esters of glycerol and propylene glycol) had been previously evaluated by the Committee as emulsifying agents. These substances have food additive specifications and have been allocated ADIs. Although the use of these substances as flavouring agents would not be anticipated to cause a safety concern, the Committee questioned whether these substances have flavouring properties and did not evaluate them according to the Procedure for the Safety Evaluation of Flavouring Agents. In addition, the Committee questioned the flavouring function of lactylated fatty acid esters of glycerol and propylene glycol (listed as No. 1722), for which an ADI and specifications are not available, and decided not to evaluate this substance as a flavouring agent using the Procedure.

E. Aliphatic acetals

Flavouring agent	No.	Specifications ^a	Conclusions based on current estimated intake
Structural Class I			
(+/-) 1-Acetoxy-1-ethoxyethane	1726	N	No safety concern
Acetaldehyde hexyl isoamyl acetal	1727	N	No safety concern
1,1-Dimethoxy-trans-2-hexene	1728	N	No safety concern
Acetaldehyde diisoamyl acetal	1729	N	No safety concern
Isovaleraldehyde diethyl acetal	1730	N	No safety concern
Valeraldehyde dibutyl acetal	1731	N	No safety concern
Hexanal hexyl isoamyl acetal	1735	N	No safety concern
Hexanal dihexyl acetal	1738	N	No safety concern
Nonanal dimethyl acetal	1742	N	No safety concern
Dodecanal dimethyl acetal	1746	N	No safety concern
Acetaldehyde di- <i>cis</i> -3-hexenyl acetal	1747	N	No safety concern
Structural Class III			
Isovaleraldehyde propyleneglycol acetal	1732	N	No safety concern
Isovaleraldehyde glyceryl acetal	1733	N	No safety concern
Valeraldehyde propyleneglycol acetal	1734	N	No safety concern
Hexanal octane-1,3-diol acetal	1736	N	No safety concern
Hexanal butane-2,3-diol acetal	1737	N	No safety concern
Heptanal propyleneglycol acetal	1739	N	No safety concern
2,6-Dimethyl-5-heptenal propyleneglycol acetal	1740	N	No safety concern
Octanal propyleneglycol acetal	1741	N	No safety concern
Nonanal propyleneglycol acetal	1743	N	No safety concern
Decanal propyleneglycol acetal	1744	N	No safety concern
Undecanal propyleneglycol acetal	1745	N	No safety concern
Isobutanal propyleneglycol acetal	1748	N	No safety concern
Acetaldehyde 1,3-octanediol acetal	1749	N	No safety concern

^aN: new specifications prepared**F. Sulfur-containing heterocyclic compounds**

Flavouring agent	No.	Specifications ^a	Conclusions based on current estimated intake
Structural Class II			
1-(3-Hydroxy-5-methyl-2-thienyl)ethanone	1750	N	No safety concern
2-(4-Methyl-5-thiazolyl)ethyl formate	1751	N	No safety concern
2-(4-Methyl-5-thiazolyl)ethyl propionate	1752	N	No safety concern
2-(4-Methyl-5-thiazolyl)ethyl butanoate	1753	N	No safety concern
2-(4-Methyl-5-thiazolyl)ethyl isobutyrate	1754	N	No safety concern
2-(4-Methyl-5-thiazolyl)ethyl hexanoate	1755	N	No safety concern
2-(4-Methyl-5-thiazolyl)ethyl octanoate	1756	N	No safety concern
2-(4-Methyl-5-thiazolyl)ethyl decanoate	1757	N	No safety concern
2,5-Dimethylthiazole	1758	N	No safety concern
5-Acetyl-2,3-dihydro-1,4-thiazine	1766	N	No safety concern
Structural Class III			
2-Acetyl-2-thiazoline	1759	N	No safety concern
2-Propionyl-2-thiazoline	1760	N	No safety concern
<i>cis</i> - and <i>trans</i> -5-Ethyl-4-methyl-2-(2-methylpropyl)thiazoline	1761	N	No safety concern
<i>cis</i> - and <i>trans</i> -5-Ethyl-4-methyl-2-(1-methylpropyl)thiazoline	1762	N	No safety concern
Pyrrolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-dithiazine	1763	N	No safety concern
2-Hexylthiophene	1764	N	No safety concern
3-(Methylthio)-methylthiophene	1765	N	No safety concern

^aN: new specifications prepared

G. Aliphatic and aromatic amines and amides

Flavouring agent	No.	Specifications ^a	Conclusions based on current estimated intake
Structural Class I			
4-Aminobutyric acid	1771	N	No safety concern
N-Gluconyl ethanolamine	1772	N	No safety concern
N-Gluconyl ethanolamine phosphate	1773	N	No safety concern
N-Lactoyl ethanolamine	1774	N	No safety concern
N-Lactoyl ethanolamine phosphate	1775	N	No safety concern
Structural Class III			
N-(Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide	1767	N	No safety concern
N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide	1768	N	No safety concern
N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(5-methylpyridin-2-yl)ethyl)oxalamide	1769	N	No safety concern
N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide	1770	N	No safety concern
N-[(Ethoxycarbonyl)methyl]-p-menthane-3-carboxamide	1776	N	No safety concern
N-[2-(3,4-Dimethoxyphenyl)ethyl]-3,4-dimethoxycinnamic acid amide	1777	N	No safety concern
N-3,7-Dimethyl-2,6-octadienyl cyclopropylcarboxamide	1779	N	No safety concern

^aN: new specifications prepared.

H. Aliphatic alicyclic linear α,β -unsaturated di- and trienals and related alcohols, acids and esters

Flavouring agent	No.	Specifications ^a	Conclusions based on current estimated intake
Structural Class I			
2,4-Hexadienyl acetate	1780	N	No safety concern
2,4-Hexadienyl propionate	1781	N	No safety concern
2,4-Hexadienyl isobutyrate	1782	N	No safety concern
2,4-Hexadienyl butyrate	1783	N	No safety concern
2,4-Heptadien-1-ol	1784	N	No safety concern
Nona-2,4,6-trienal	1785	N	No safety concern
2,4,7-Decatrienal	1786	N	No safety concern

^aN: new specifications prepared.

Recommendations and further information required**Carrageenan**

The Committee noted that the previous dietary exposure estimate for carrageenan was made solely using production poundage and may be outdated. The Committee therefore recommended that a new dietary exposure evaluation, employing specific food type and use level information, be undertaken, ensuring that new uses are adequately taken into consideration.

Cyclotetraglucose and cyclotetraglucose syrup

Data on the identity of the bacterial strain used to produce the 6-GT/IMT enzyme preparation and evidence of its lack of pathogenicity and toxigenicity. For cyclotetraglucose syrup, information on total saccharide content, the unidentified fraction and test methods.

Steviol glucosides

Submission of the results of the ongoing toxicological and clinical studies, in particular studies addressing pharmacological effects.

CORRIGENDUM**COMPENDIUM OF FOOD ADDITIVE SPECIFICATIONS
FAO FOOD AND NUTRITION PAPER 52, Addendum 8, ROME, 2000.**

Page 150, last entry *o*-(*Methylthio*)phenol, the synonym Thioguaiacol is deleted as this substance is not a synonym to *o*-(*Methylthio*)phenol.

**COMPENDIUM OF FOOD ADDITIVE SPECIFICATIONS
FAO FOOD AND NUTRITION PAPER 52, Volume 2, ROME, 1992.
COMBINED COMPENDIUM OF FOOD ADDITIVE SPECIFICATIONS
FAO JECFA MONOGRAPHS 1, Volume 3, ROME 3, 2005.*****Sodium Carboxy Methyl Cellulose***

Page 1326, Under Identification tests C in FNP 52, Volume 2, the 4th line from the bottom of the page, the sentence 'No precipitate appears.' is changed to 'A precipitate appears.'

Page 316, Under Identification, Precipitate formation, in FAO JECFA Monographs 1, Volume 3, line 6, the sentence 'No precipitate appears.' is changed to 'A precipitate appears.'

The original specification for Sodium Carboxy Methyl Cellulose, published in FAO Food and Nutrition Paper 31/2, Rome, 1984, the text of the identification test on precipitate formation was correctly worded as follows: To 5 ml of an 0.5% solution of the sample add 5 ml of a solution 5% solution of copper sulfate or aluminium sulfate. A precipitate appears.

FAO TECHNICAL PAPERS

FAO JECFA MONOGRAPHS

- 1 Combined compendium of food additive specifications – JECFA specifications monographs from 1st to 65th meeting. (E)
Vol. 1 Food additives A – D
Vol. 2 Food additives E – O
Vol. 3 Food additives P – Z
Vol. 4 Analytical methods, test procedures and laboratory solutions
- 2 Residue evaluation of certain veterinary drugs
Joint FAO/WHO Expert Committee on Food Additives
66th meeting 2006 (E)
- 3 Compendium of food additive specifications -
Joint FAO/WHO Expert Committee on Food Additives
67th meeting 2006 (E)

Availability: 2007

Ar – Arabic	Multil – Multilingual
C – Chinese	* Out of print
E – English	** In preparation
F – French	
P – Portuguese	
S – Spanish	

The FAO Technical Papers are available through the authorized FAO Sales Agents or directly from Sales and Marketing Group, FAO, Viale delle Terme di Caracalla, 00153 Rome, Italy.

COMPENDIUM OF FOOD ADDITIVE SPECIFICATIONS

Joint FAO/WHO Expert Committee on Food Additives

68th meeting 2007

This document contains food additive specifications monographs, analytical methods and other information, prepared at the sixty-eighth meeting of the Joint FAO/WHO Expert Committee on Food Additives (JECFA), which was held in Geneva, Switzerland, from 19 to 28 June 2007. The specifications monographs provide information on the identity and purity of food additives used directly in foods or in food production. The main three objectives of these specifications are to identify the food additive that has been subjected to testing for safety, to ensure that the additive is of the quality required for use in food or in processing, and to reflect and encourage good manufacturing practice. This publication and other documents produced by JECFA contain information that is useful to all those who work with or are interested in food additives and their safe use in food.

