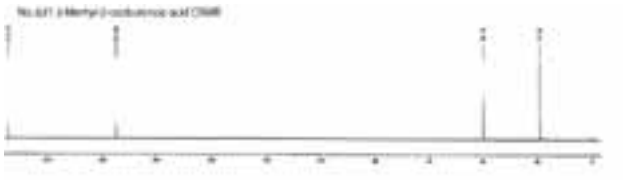
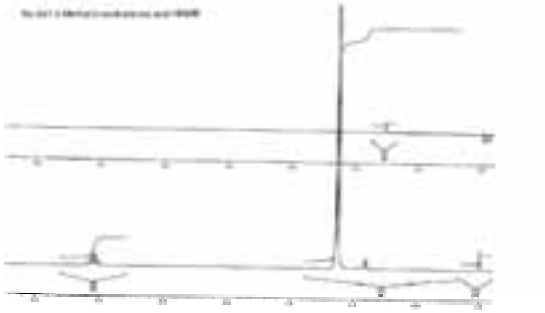
Spectra of certain flavouring agents

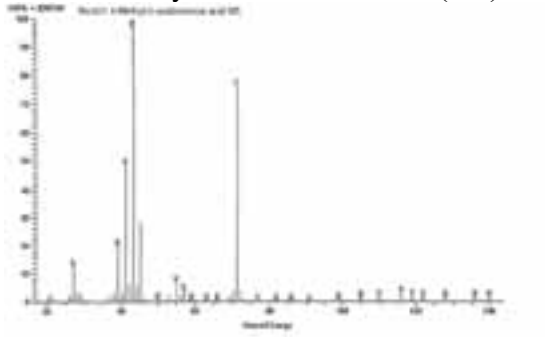
631 3-Methyl-2-oxobutanoic acid (13C-NMR)



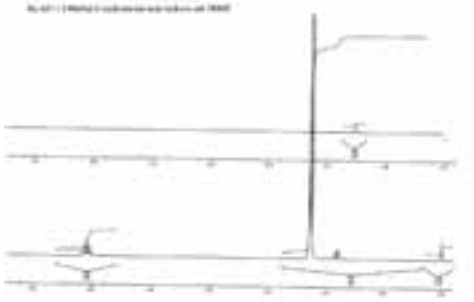
631 3-Methyl-2-oxobutanoic acid (1H-NMR)



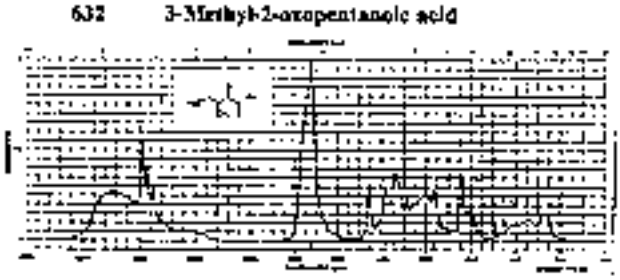
631 3-Methyl-2-oxobutanoic acid (MS)



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

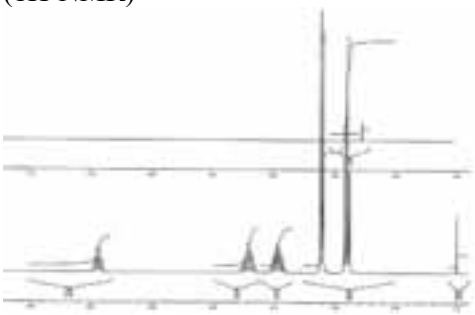


632 3-Methyl-2-oxopentanoic acid (IR)

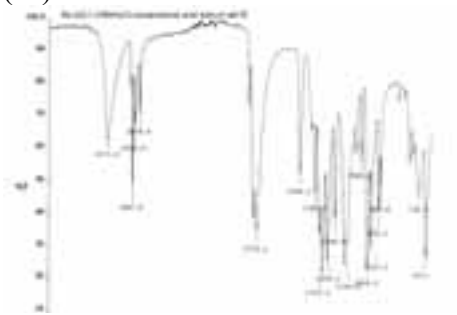


632.1 3-Methyl-2-oxopentanoic acid, sodium salt (13C-NMR)

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

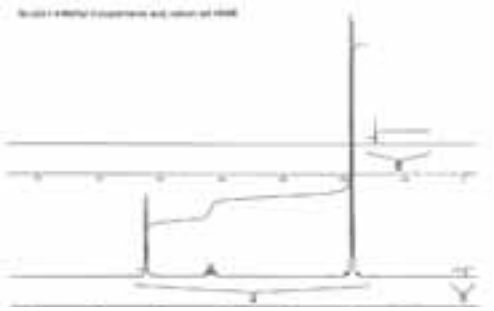


632.1 3-Methyl-2-oxopentanoic acid, sodium salt (IR)

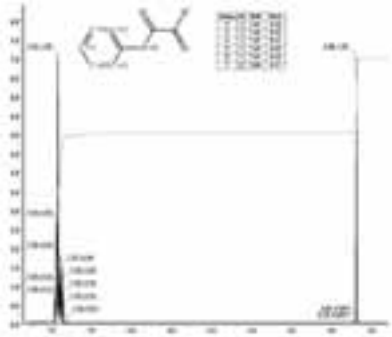


633 4-Methyl-2-oxopentanoic acid (IR)

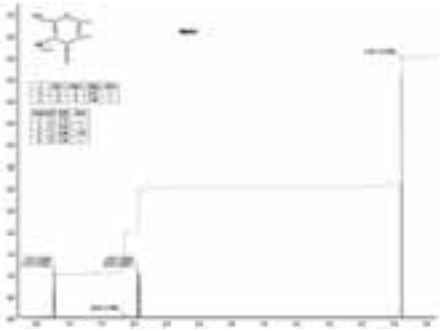
633.1 4-Methyl-2-oxopentanoic acid, sodium salt (1H-NMR)



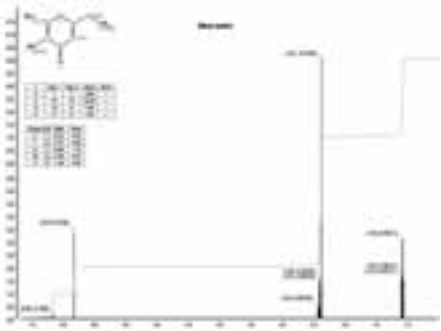
1479 2-Oxo-3-phenylpropionic acid, sodium salt



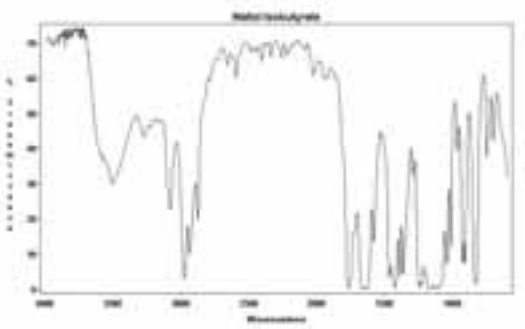
1480 Maltol



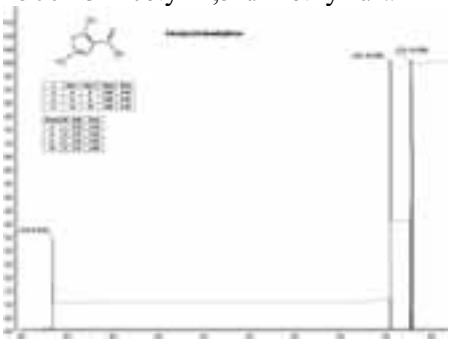
1481 Ethyl maltol



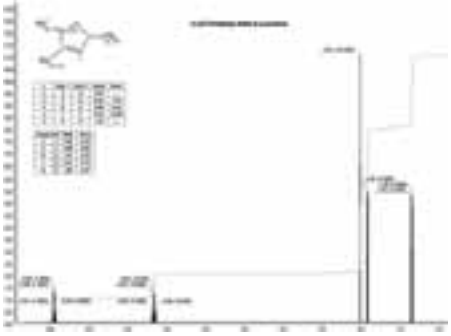
1482 Maltyl isobutyrate



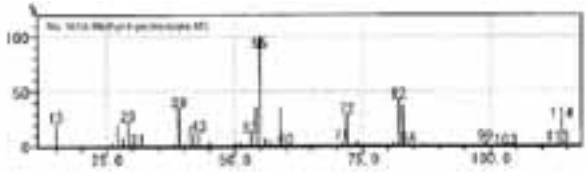
1506 3-Acetyl-2,5-dimethylfuran



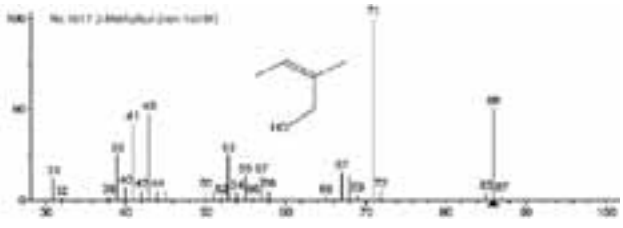
1559 2,4,5-Trimethyl-delta-oxazoline



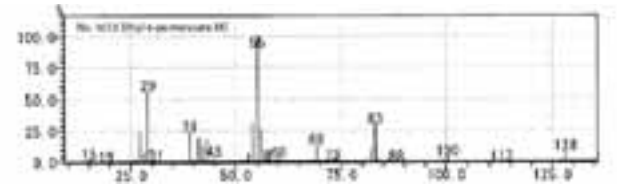
1616 Methyl 4-pentenoate (MS)



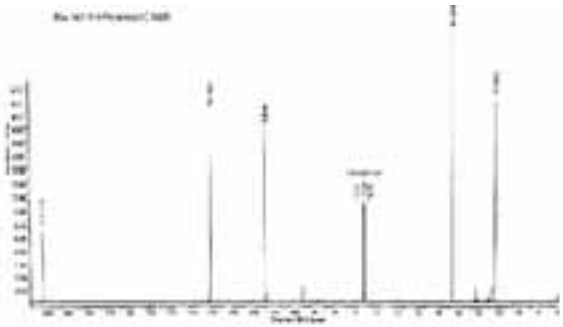
1617 2-Methylbut-2-en-1-ol (MS)



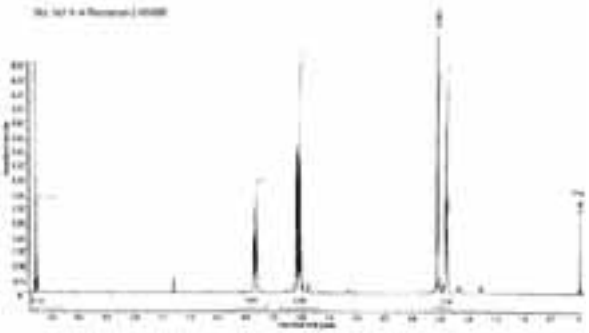
1618 Ethyl 4-pentenoate (MS)



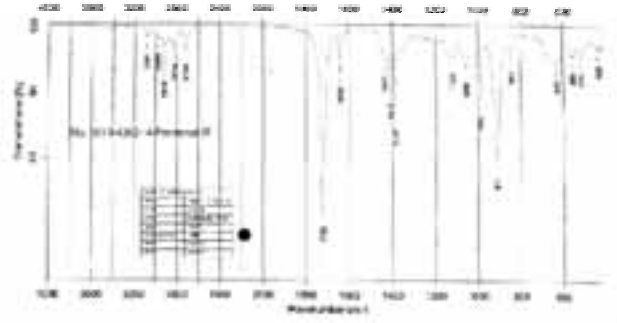
1619 4-Pentenal (13C-NMR)



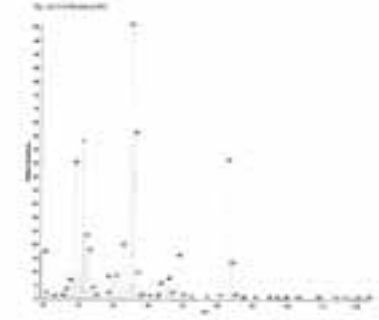
1619 4-Pentenal (1H-NMR)



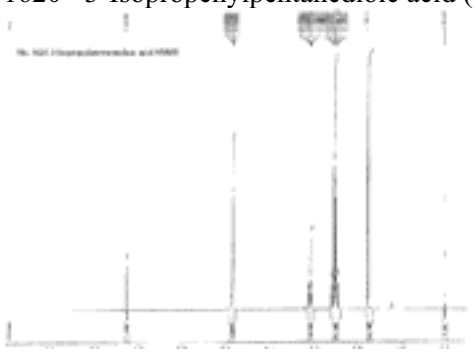
1619 4-Pentenal (IR)



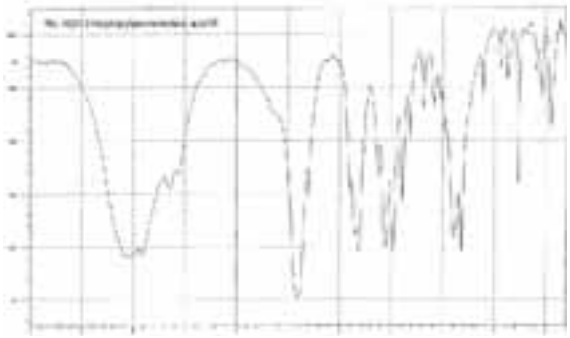
1619 4-Pentenal (MS)



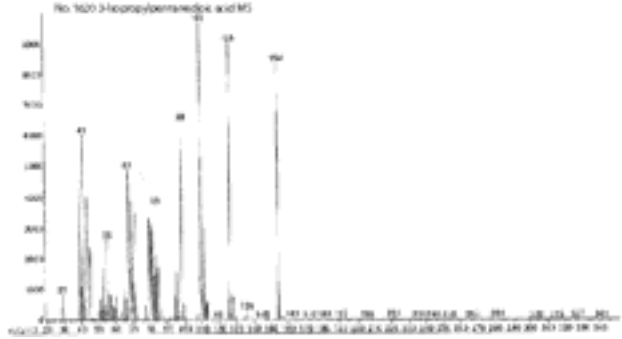
1620 3-Isopropenylpentanedioic acid (1H-NMR)



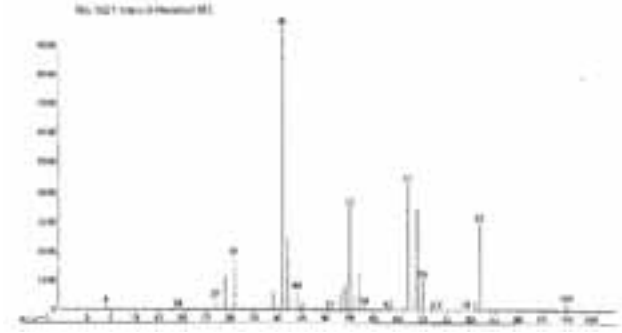
1620 3-Isopropenylpentanedioic acid (IR)



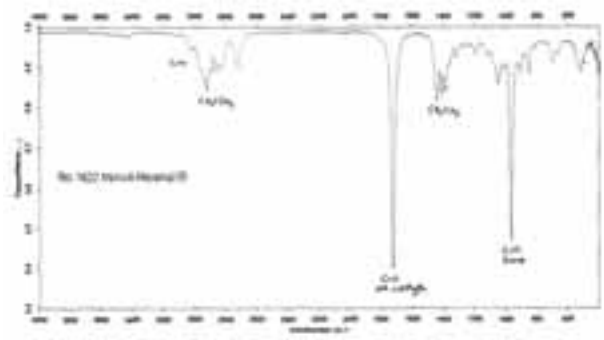
1620 3-Isopropenylpentanedioic acid (MS)



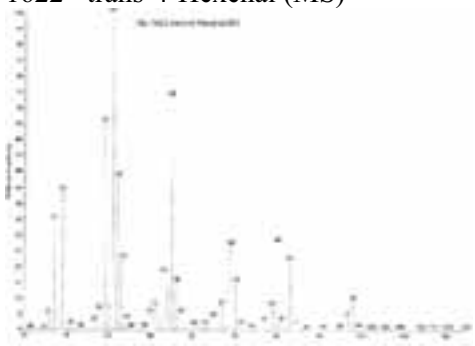
1621 trans-3-Hexenol (MS)



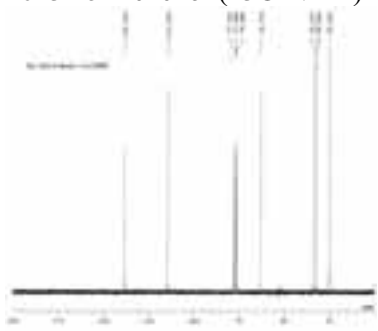
1622 trans-4-Hexenal (IR)



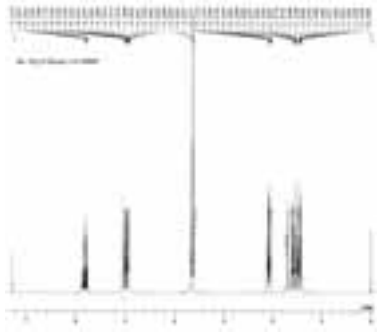
1622 trans-4-Hexenal (MS)



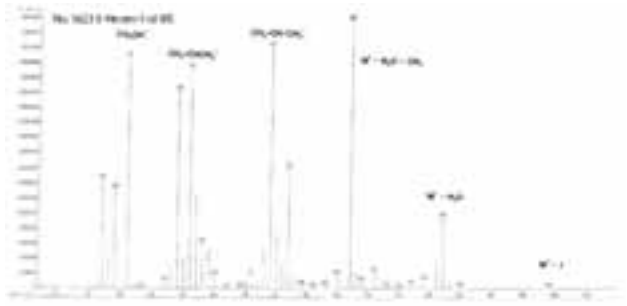
1623 5-Hexenol (13C-NMR)



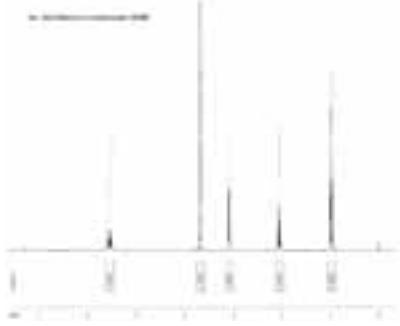
1623 5-Hexenol (1H-NMR)



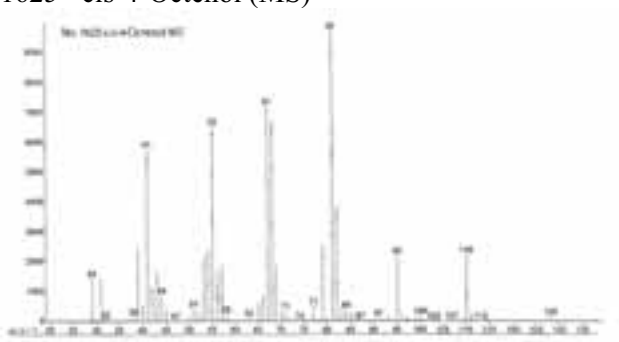
1623 5-Hexenol (MS)



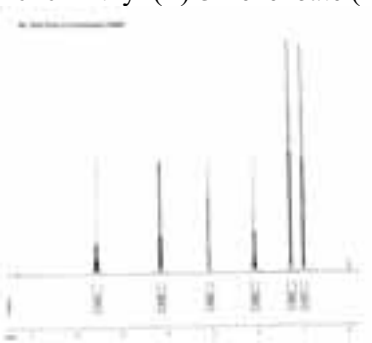
1624 Methyl (Z)-3-hexenoate (1H-NMR)



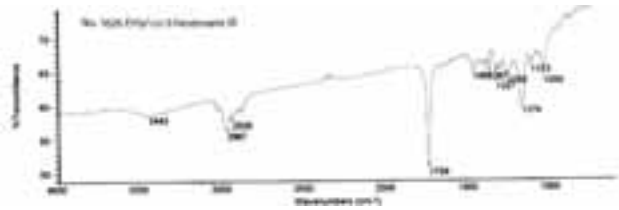
1625 cis-4-Octenol (MS)



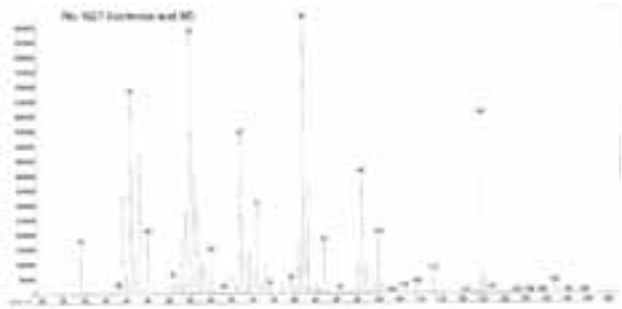
1626 Ethyl (Z)-3-hexenoate (1H-NMR)



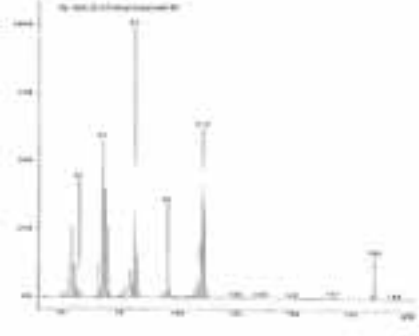
1626 Ethyl (Z)-3-hexenoate (IR)



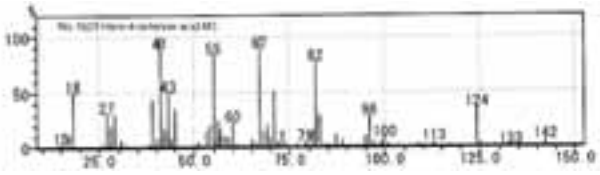
1627 3-Octenoic acid (MS)



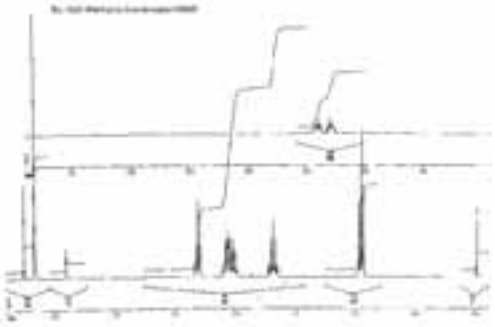
1628 (Z)-3-Octenyl propionate (MS)



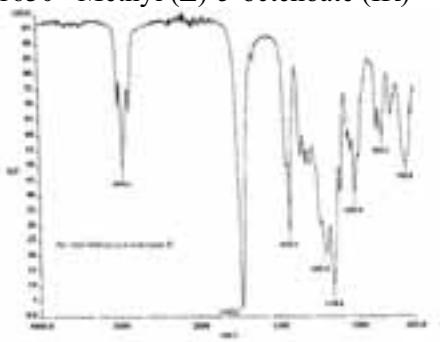
1629 trans-4-Octenoic acid (MS)



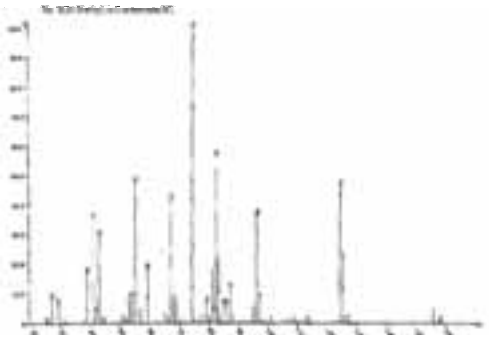
1630 Methyl (Z)-5-octenoate (1H-NMR)



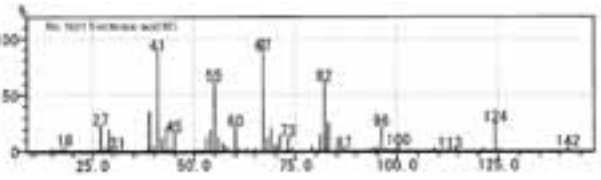
1630 Methyl (Z)-5-octenoate (IR)



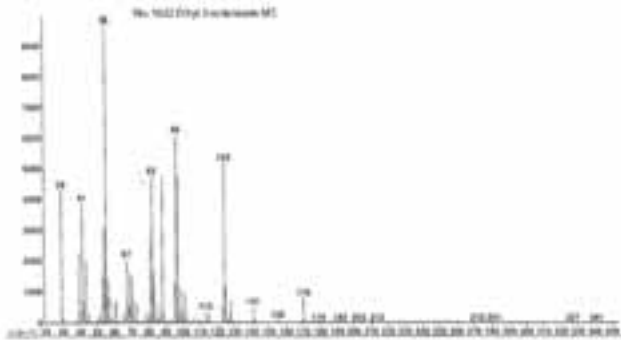
1630 Methyl (Z)-5-octenoate (MS)



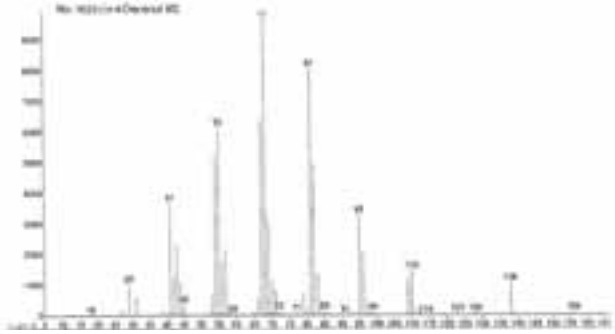
1631 cis-5-Octenoic acid (MS)



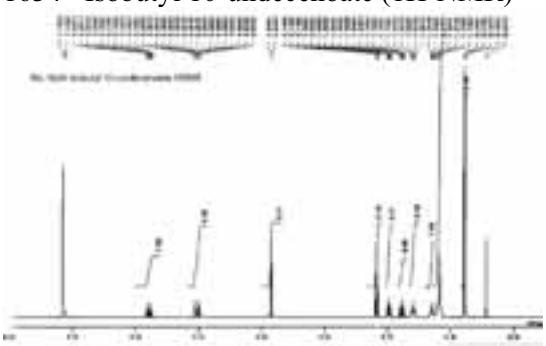
1632 Ethyl 3-octenoate (MS)



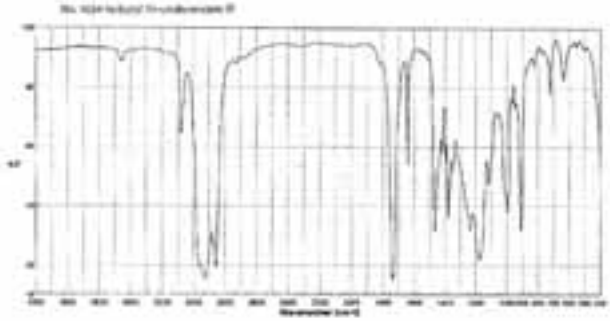
1633 cis-4-Decenol (MS)



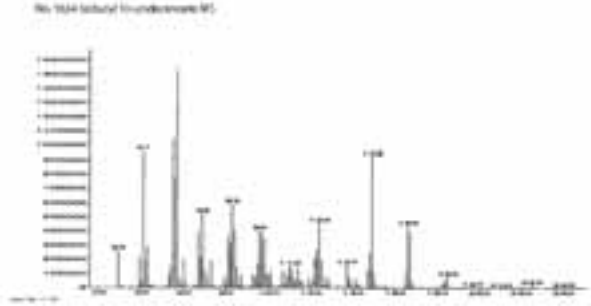
1634 Isobutyl 10-undecenoate (1H-NMR)



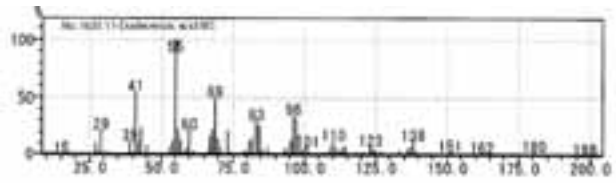
1634 Isobutyl 10-undecenoate (IR)



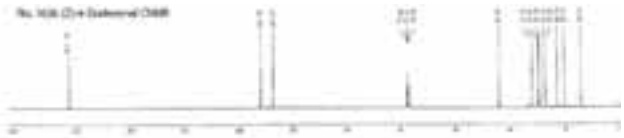
1634 Isobutyl 10-undecenoate (MS)



1635 11-Dodecenoic acid (MS)

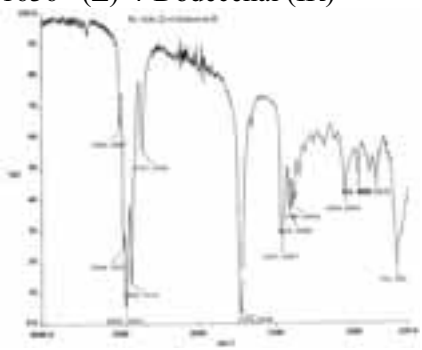


1636 (Z)-4-Dodecenal (13C-NMR)

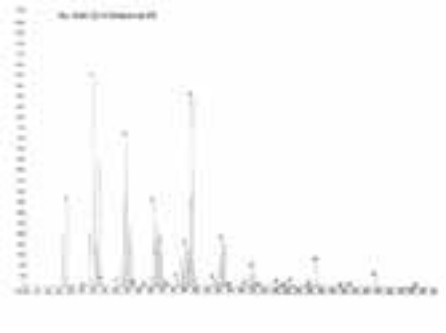


1636 (Z)-4-Dodecenal (1H-NMR)

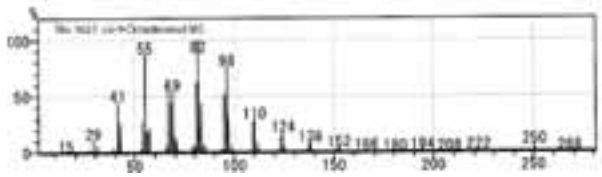
1636 (Z)-4-Dodecenal (IR)



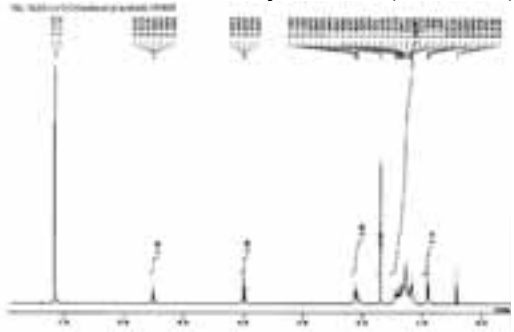
1636 (Z)-4-Dodecenal (MS)



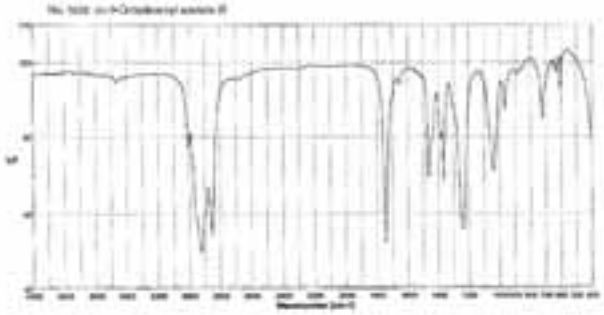
1637 cis-9-Octadecenol (MS)



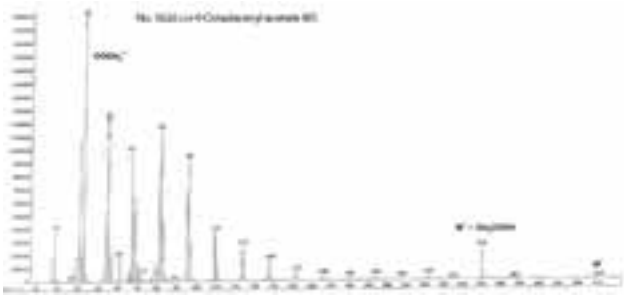
1638 cis-9-Octadecenyl acetate (1H-NMR)



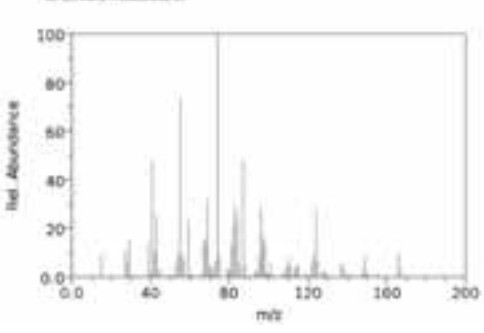
1638 cis-9-Octadecenyl acetate (IR)



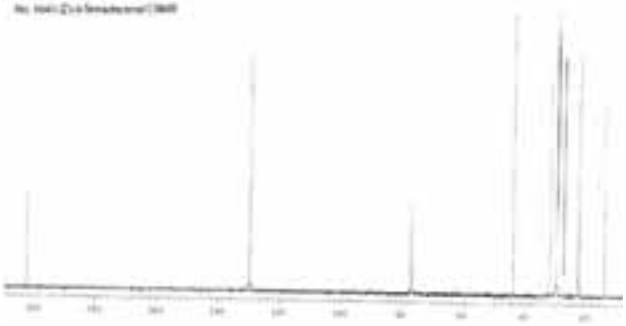
1638 cis-9-Octadecenyl acetate (MS)



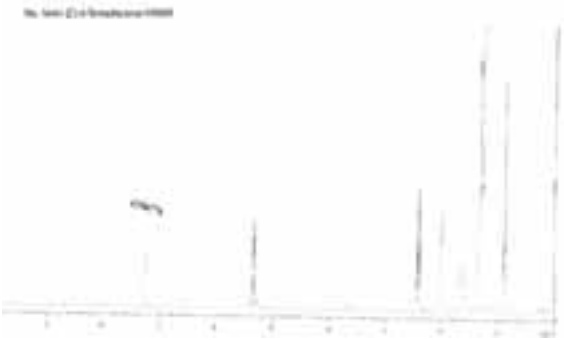
1639 Methyl 10-undecenoate (MS)



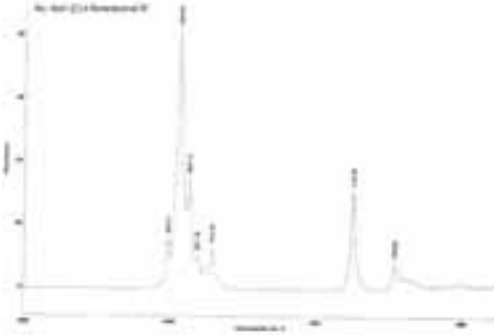
1640 (Z)-8-Tetradecenal (13C-NMR)



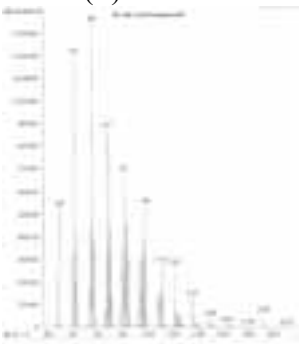
1640 (Z)-8-Tetradecenal (1H-NMR)



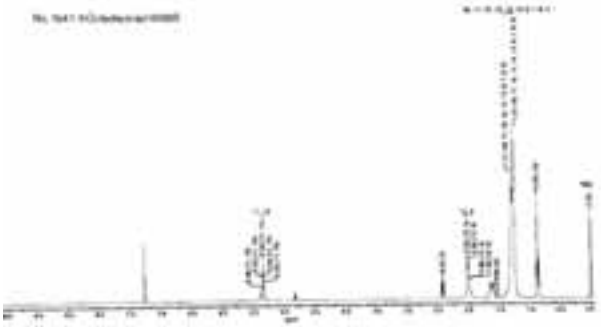
1640 (Z)-8-Tetradecenal (IR)



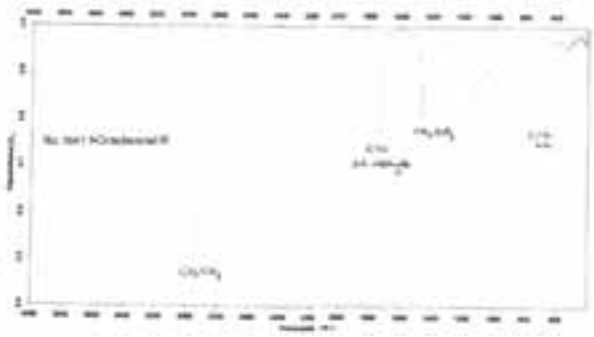
1640 (Z)-8-Tetradecenal (MS)



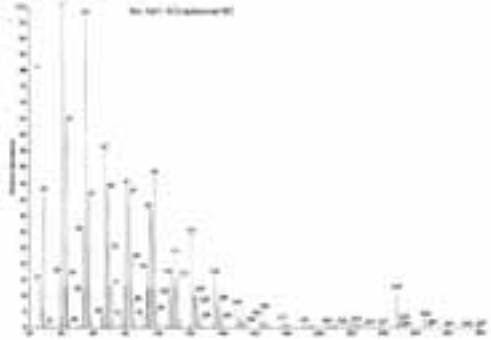
1641 9-Octadecenal (1H-NMR)



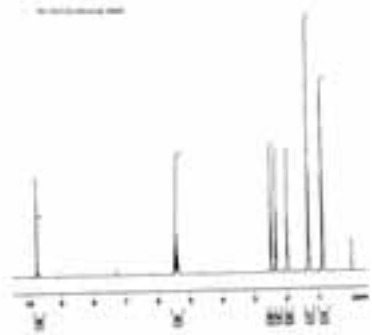
1641 9-Octadecenal (IR)



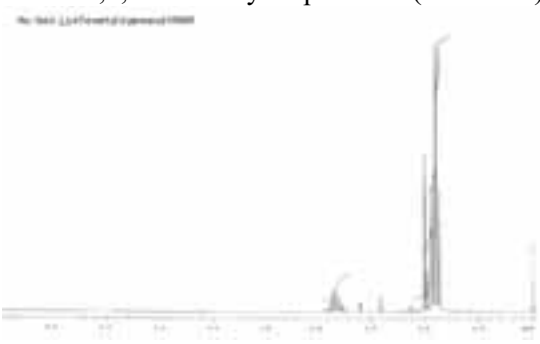
1641 9-Octadecenal (MS)



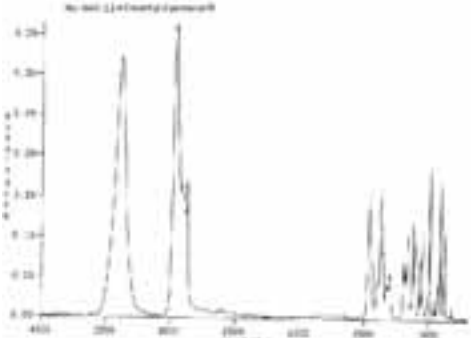
1642 (E)-4-Nonenal (1H-NMR)



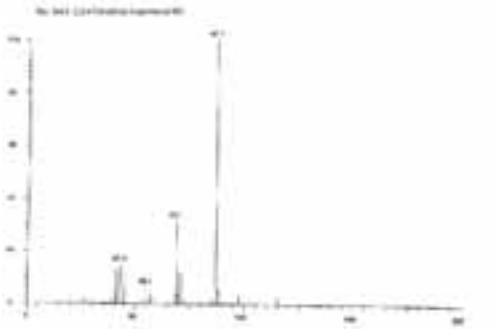
1643 2,3,4-Trimethyl-3-pentanol (1H-NMR)



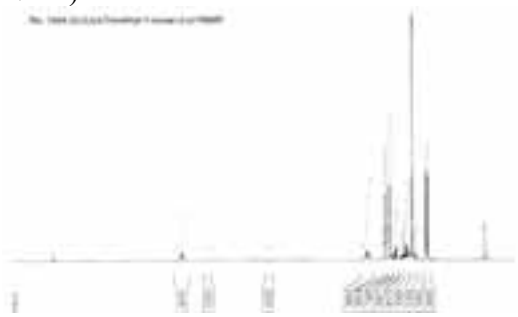
1643 2,3,4-Trimethyl-3-pentanol (IR)



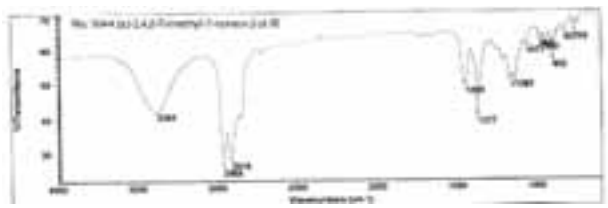
1643 2,3,4-Trimethyl-3-pentanol (MS)



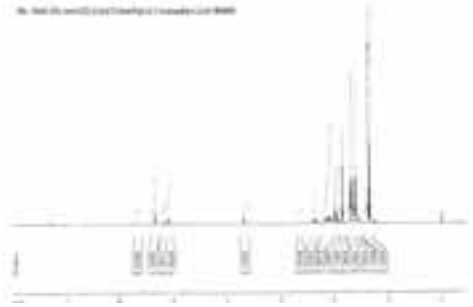
1644 (+/-)-2,4,8-Trimethyl-7-nonen-2-ol (1H-NMR)



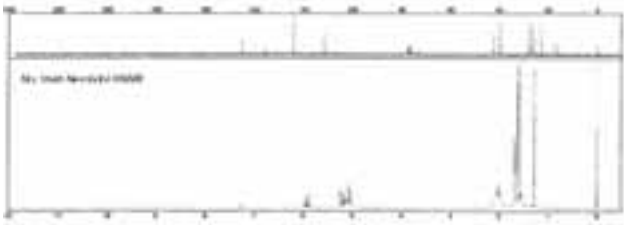
1644 (+/-)-2,4,8-Trimethyl-7-nonen-2-ol (IR)



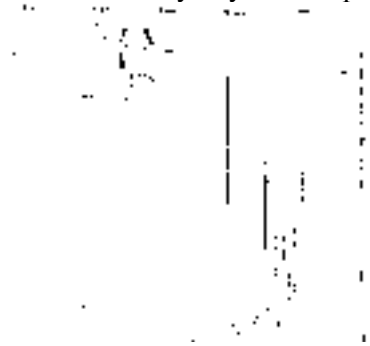
1645 (E)- and (Z)-2,4,8-Trimethyl-3,7-nonadien-2-ol (1H-NMR)



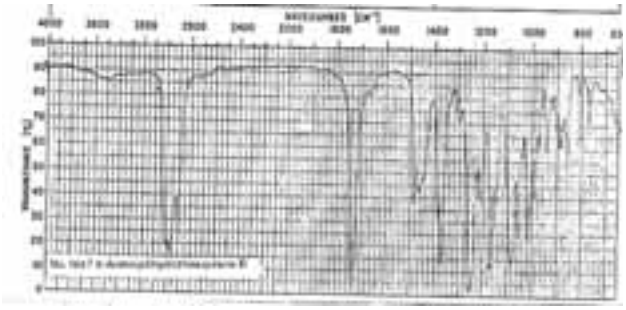
1646 Nerolidol (1H-NMR)



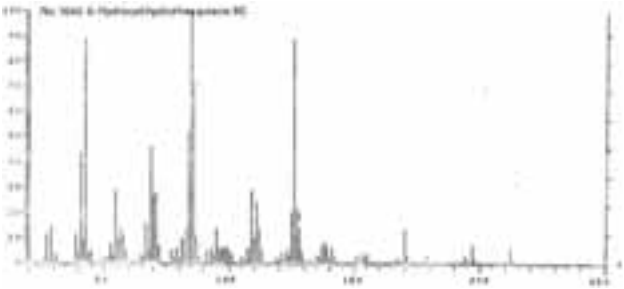
1647 6-Acetoxydihydrotheaspirane (1H-NMR)



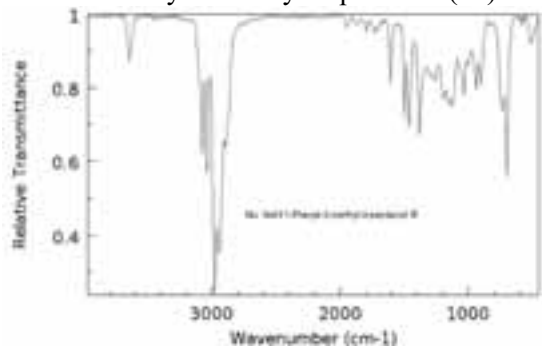
1647 6-Acetoxydihydrotheaspirane (IR)



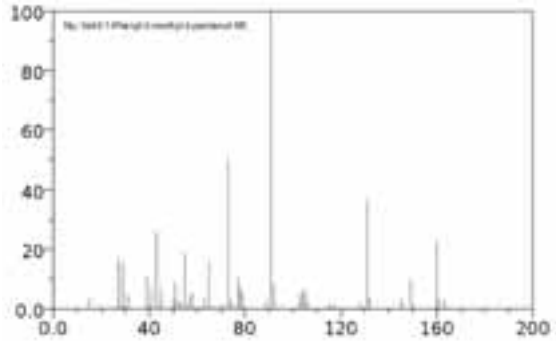
1648 6-Hydroxydihydrotheaspirane (MS)



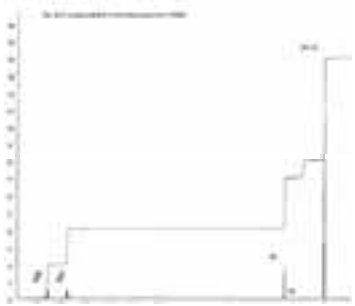
1649 1-Phenyl-3-methyl-3-pentanol (IR)



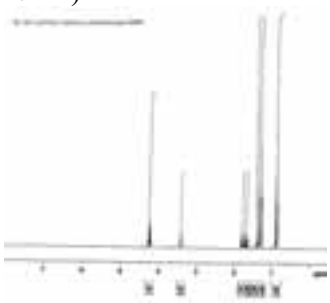
1649 1-Phenyl-3-methyl-3-pentanol (MS)



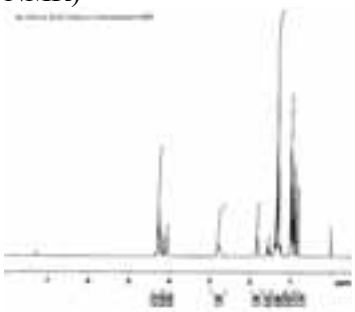
1650 p-alpha,alpha-Trimethylbenzyl alcohol (1H-NMR)



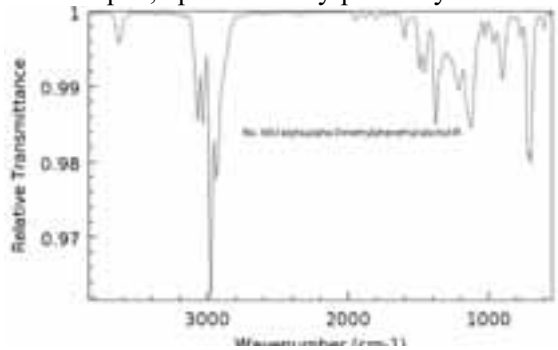
1651 (+/-)-Ethyl 2-hydroxy-2-methylbutyrate (1H-NMR)



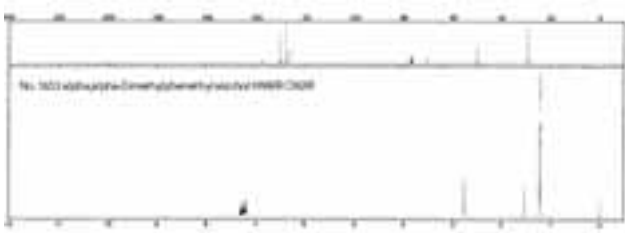
1652 (+/-)-Ethyl 2-hydroxy-3-methylvalerate (1H-NMR)



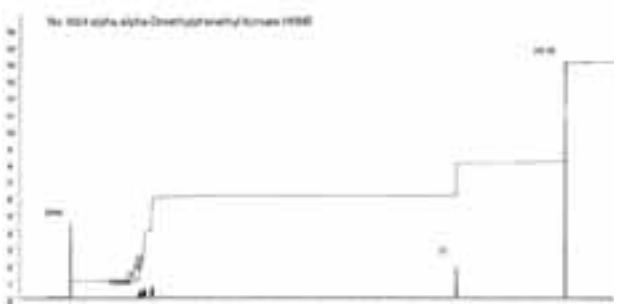
1653 alpha,alpha-Dimethylphenethyl alcohol (IR)



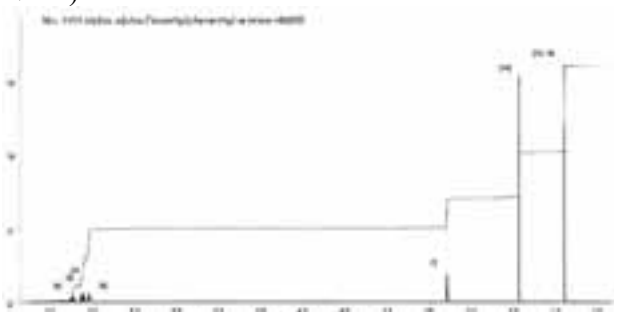
1653 alpha,alpha-Dimethylphenethyl alcohol (NMR)



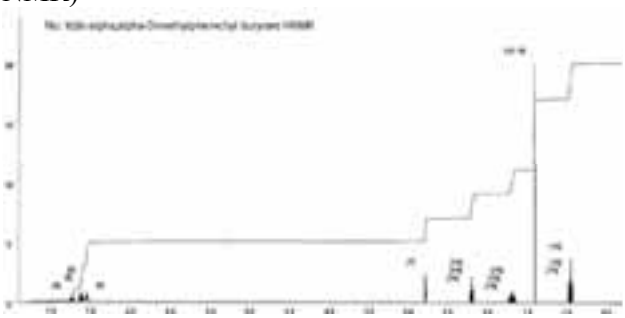
1654 alpha,alpha-Dimethylphenethyl formate (1H-NMR)



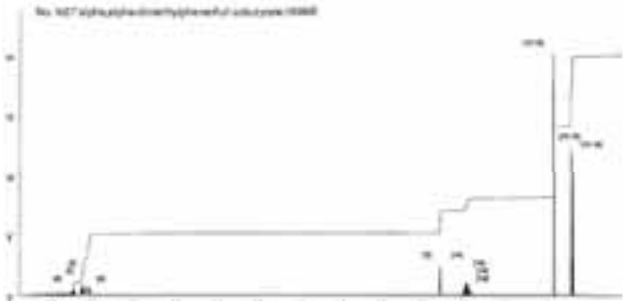
1655 alpha,alpha-Dimethylphenethyl acetate (1H-NMR)



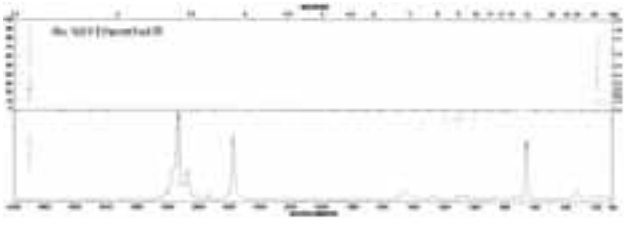
1656 alpha,alpha-Dimethylphenethyl butyrate (1H-NMR)



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

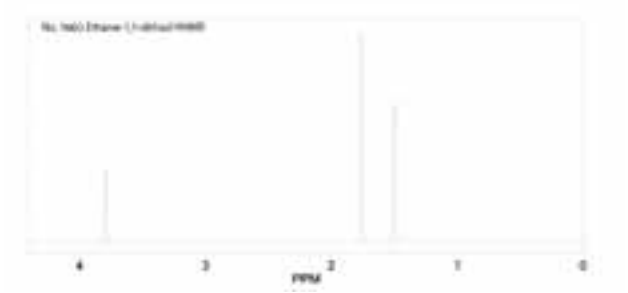


1659 Ethanethiol (IR)

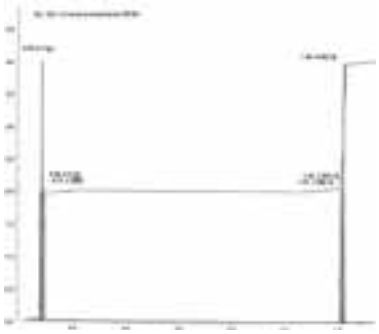


1659 Ethanethiol (NMR)

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

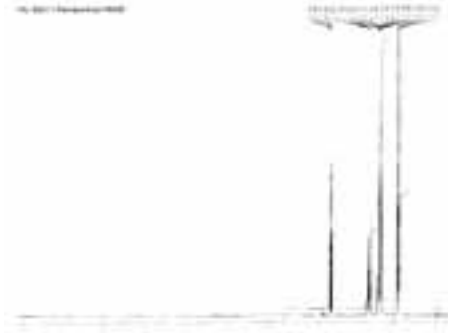


1661 Dimercaptomethane (1H-NMR)

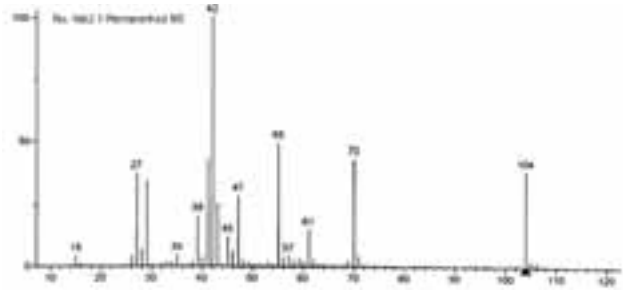


1662 1-Pentanethiol (13C-NMR)

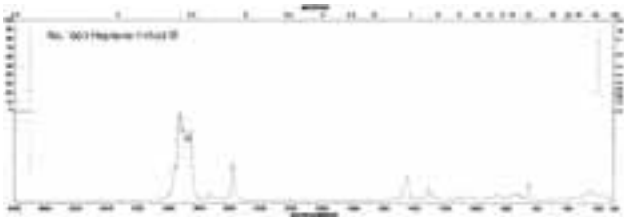
1662 1-Pentanethiol (1H-NMR)



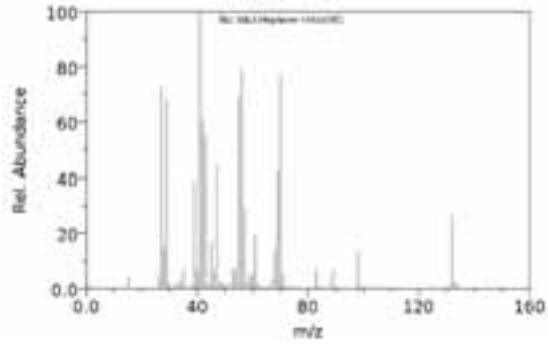
1662 1-Pentanethiol (MS)



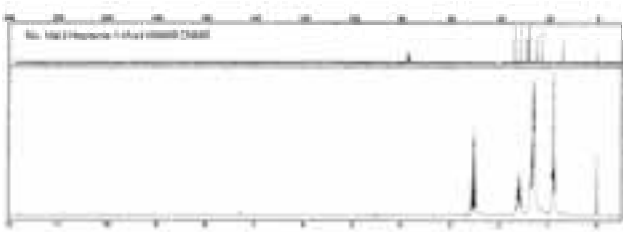
1663 Heptane-1-thiol (IR)



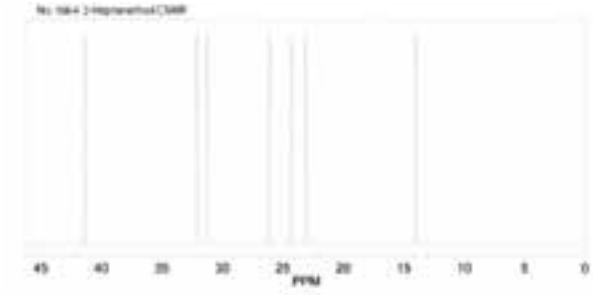
1663 Heptane-1-thiol (MS)



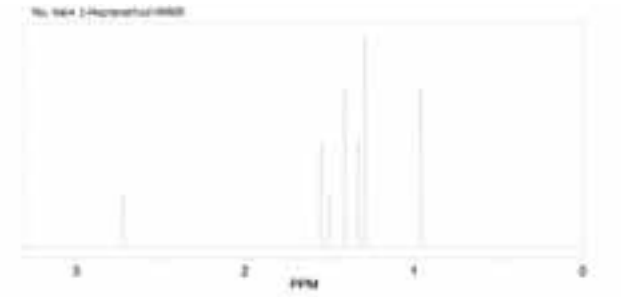
1663 Heptane-1-thiol (NMR)



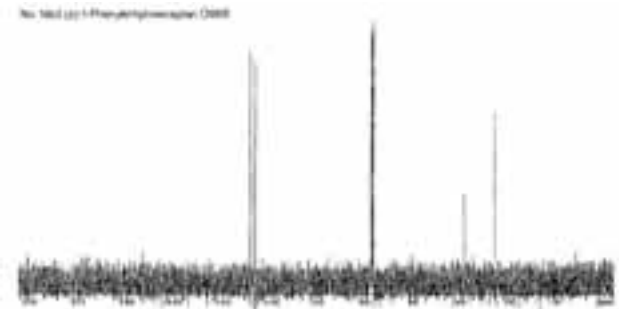
1664 2-Heptanethiol (13C-NMR)



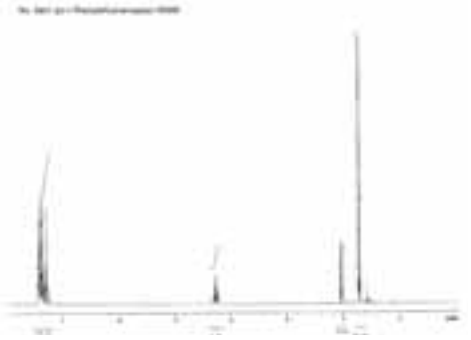
1664 2-Heptanethiol (1H-NMR)



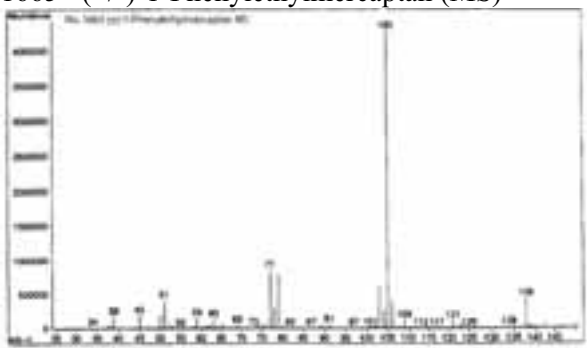
1665 (+/-)-1-Phenylethylmercaptan (13C-NMR)



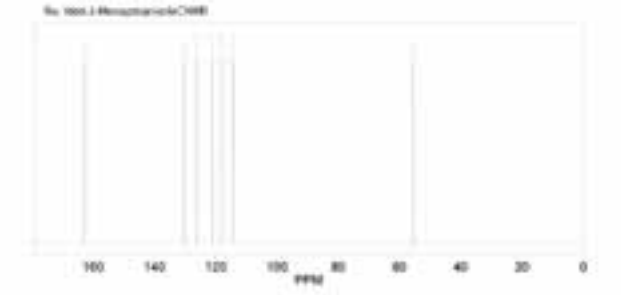
1665 (+/-)-1-Phenylethylmercaptan (1H-NMR)



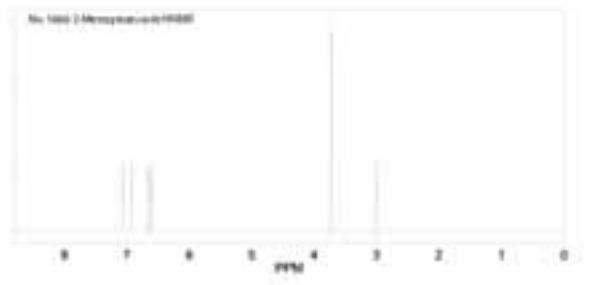
1665 (+/-)-1-Phenylethylmercaptan (MS)



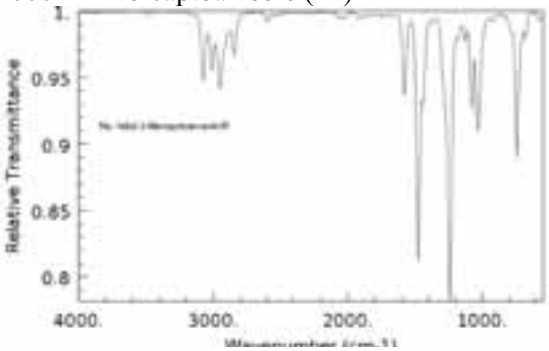
1666 2-Mercaptoanisole (13C-NMR)



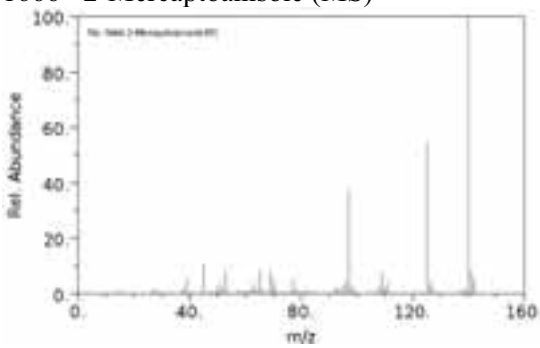
1666 2-Mercaptoanisole (1H-NMR)



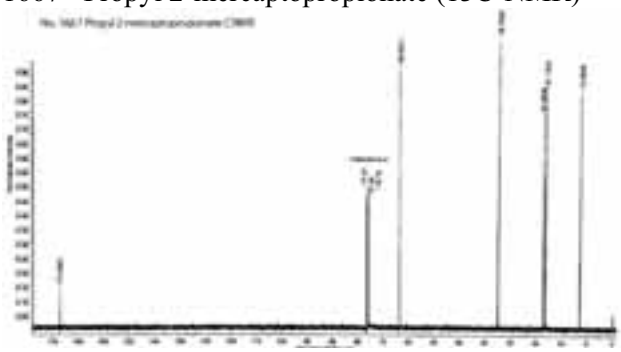
1666 2-Mercaptoanisole (IR)



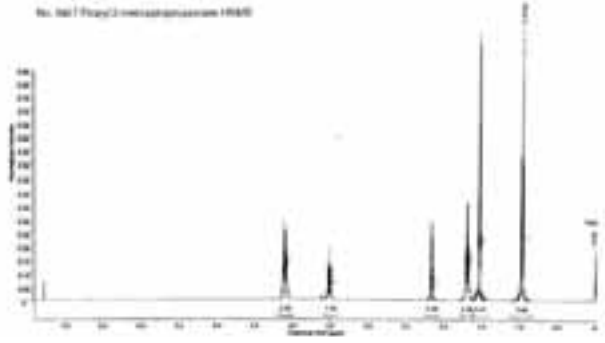
1666 2-Mercaptoanisole (MS)



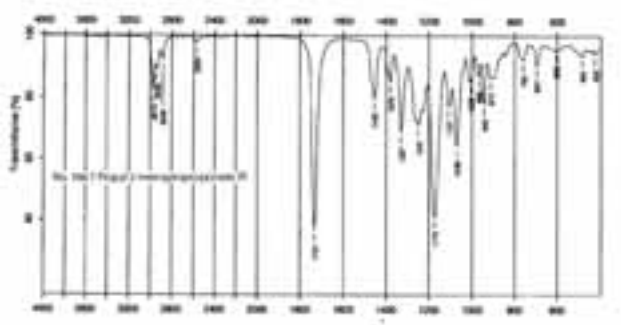
1667 Propyl 2-mercaptopropionate (13C-NMR)



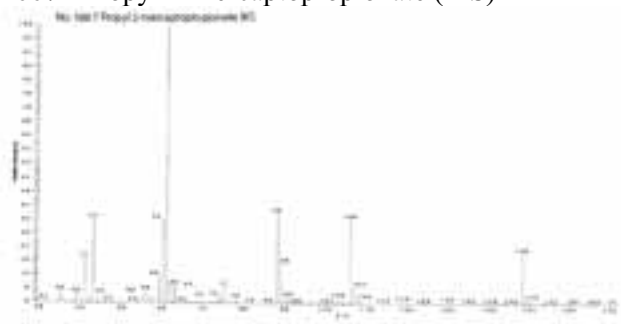
1667 Propyl 2-mercaptopropionate (1H-NMR)



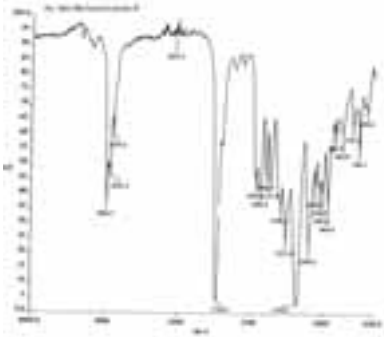
1667 Propyl 2-mercaptopropionate (IR)



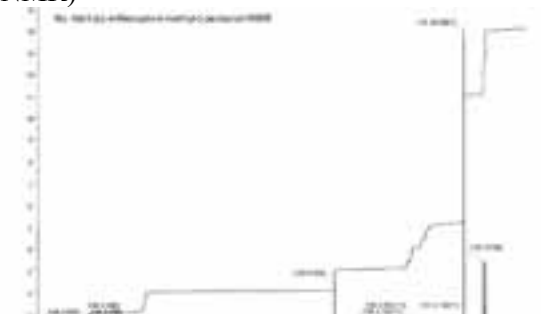
1667 Propyl 2-mercaptopropionate (MS)



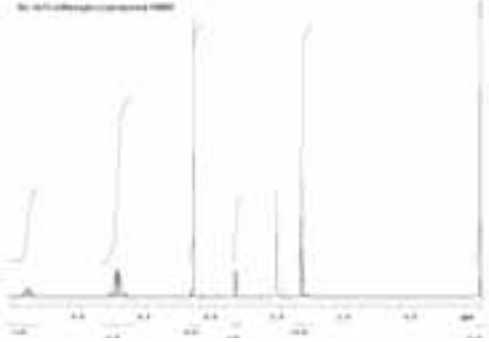
1668 Methionyl butyrate (IR)



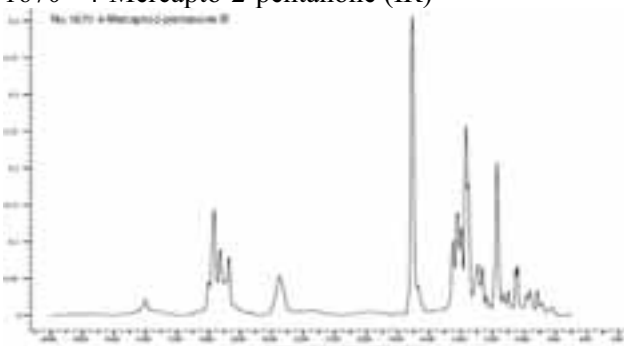
1669 (+/-)-4-Mercapto-4-methyl-2-pentanol (1H-NMR)



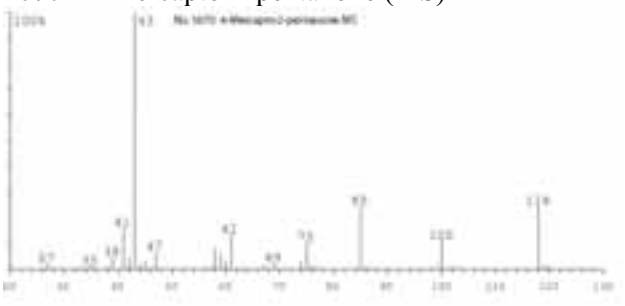
1670 4-Mercapto-2-pentanone (1H-NMR)



1670 4-Mercapto-2-pentanone (IR)



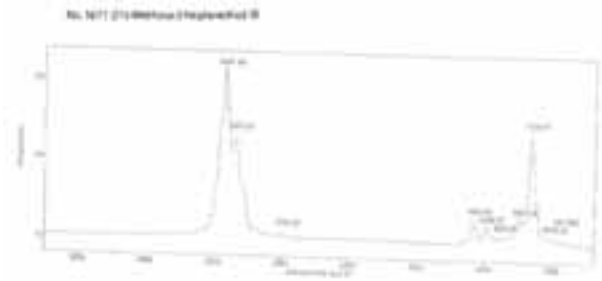
1670 4-Mercapto-2-pentanone (MS)



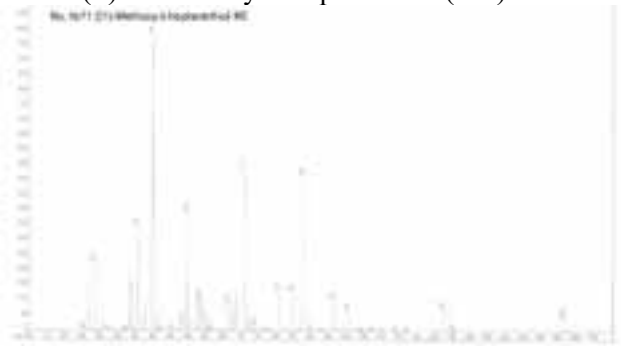
1671 (S)-1-Methoxy-3-heptanethiol (13C-NMR)

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

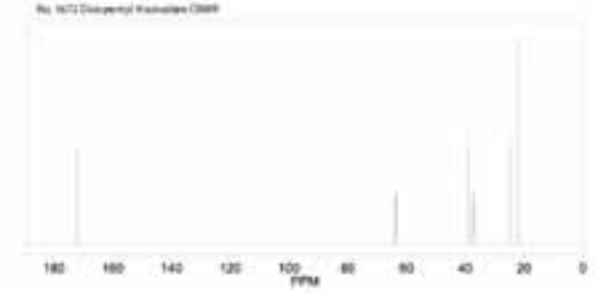
1671 (S)-1-Methoxy-3-heptanethiol (IR)



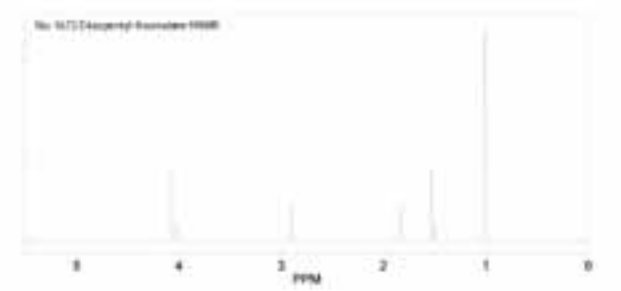
1671 (S)-1-Methoxy-3-heptanethiol (MS)



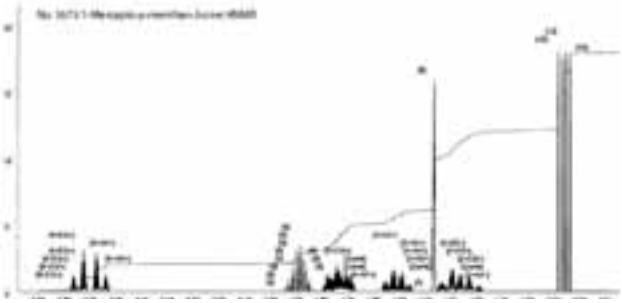
1672 Diisopentyl thiomalate (13C-NMR)



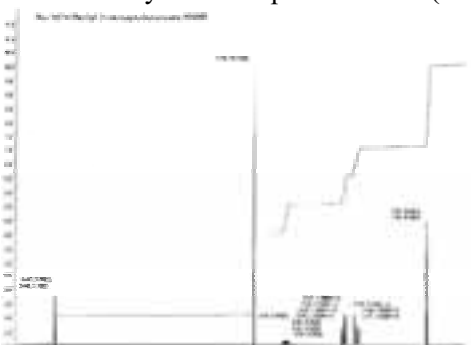
1672 Diisopentyl thiomalate (1H-NMR)



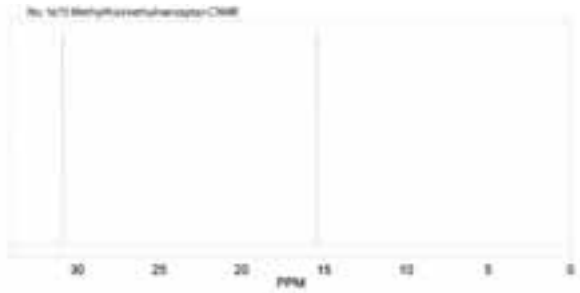
1673 cis- and trans-Mercapto-p-menthan-3-one (1H-NMR)



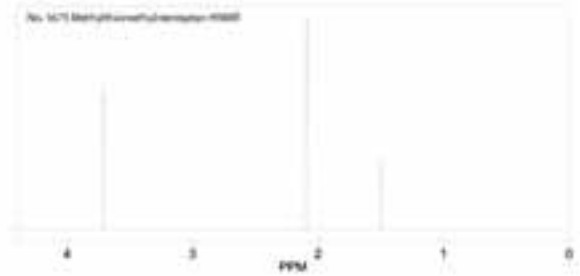
1674 Methyl 3-mercaptobutanoate (1H-NMR)



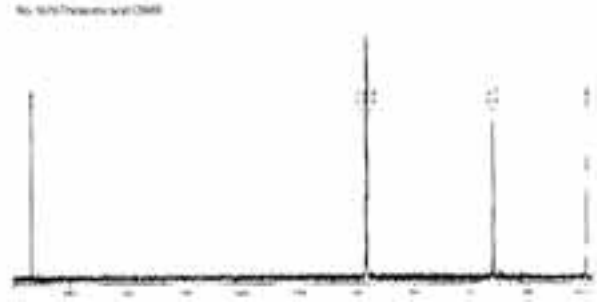
1675 Methylthiomethylmercaptan (13C-NMR)



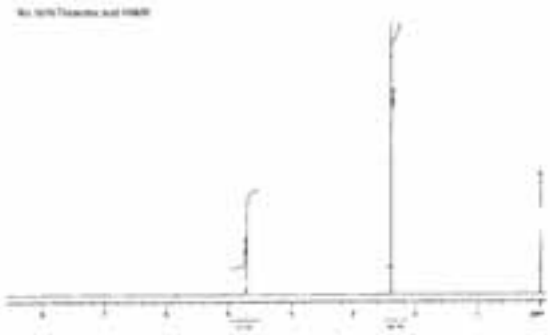
1675 Methylthiomethylmercaptan (1H-NMR)



1676 Thioacetic acid (13C-NMR)

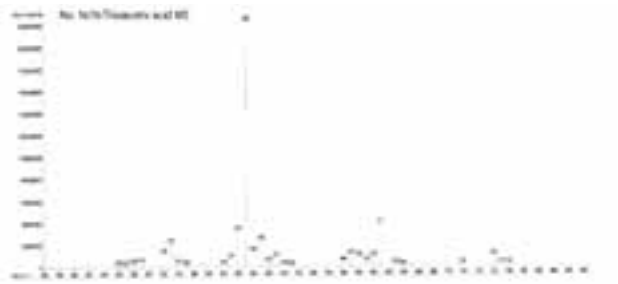


1676 Thioacetic acid (1H-NMR)

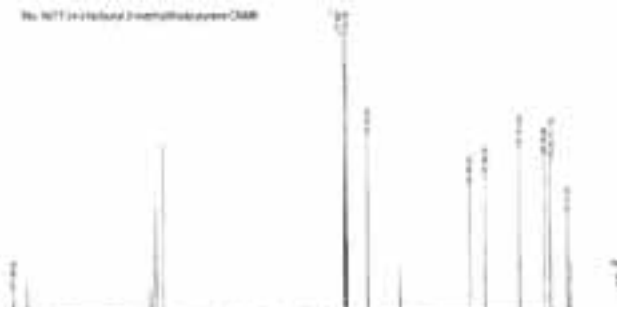


1676 Thioacetic acid (IR)

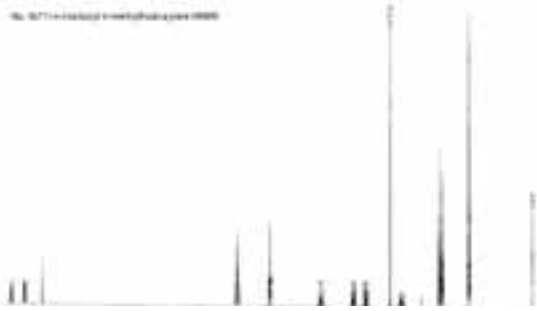
1676 Thioacetic acid (MS)



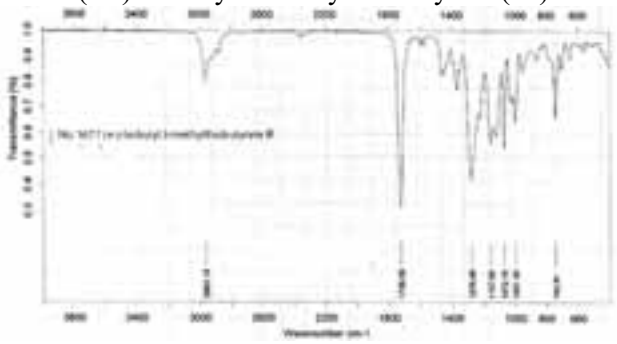
1677 (+/-)-Isobutyl 3-methylthiobutyrate (13C-NMR)



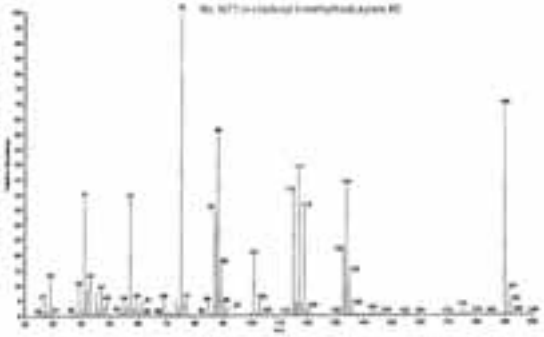
1677 (+/-)-Isobutyl 3-methylthiobutyrate (1H-NMR)



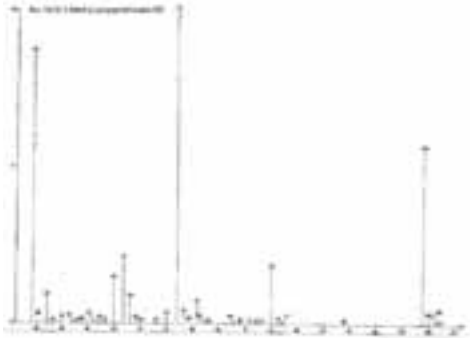
1677 (+/-)-Isobutyl 3-methylthiobutyrate (IR)



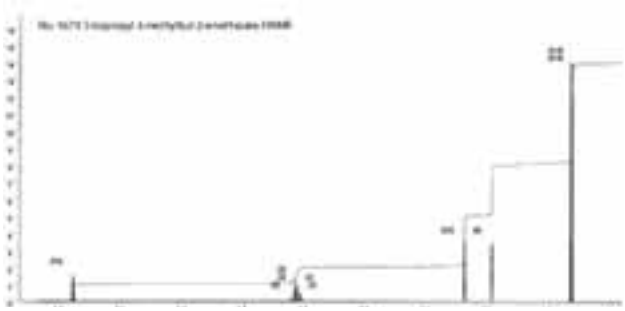
1677 (+/-)-Isobutyl 3-methylthiobutyrate (MS)



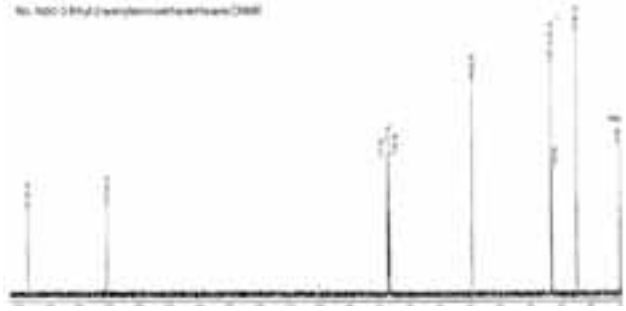
1678 S-Methyl propanethioate (MS)



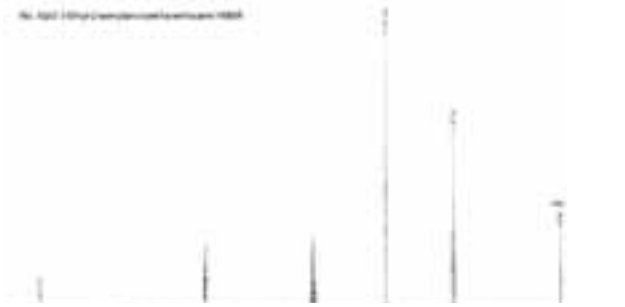
1679 S-Isopropyl 3-methylbut-2-enethioate (1H-NMR)



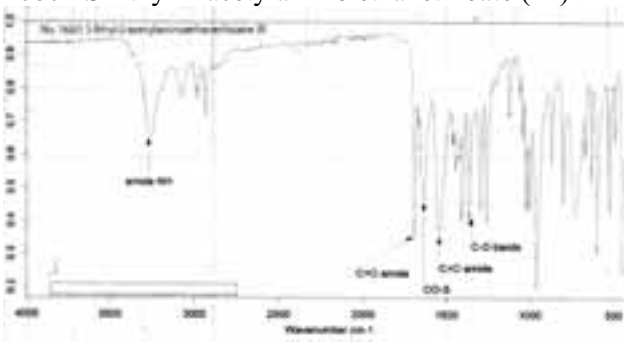
1680 S-Ethyl 2-acetylamino ethanethioate (13C-NMR)



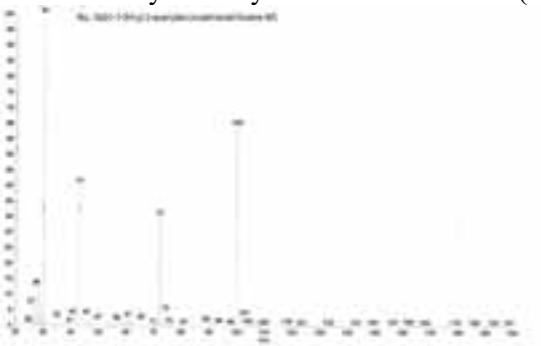
1680 S-Ethyl 2-acetylamino ethanethioate (1H-NMR)



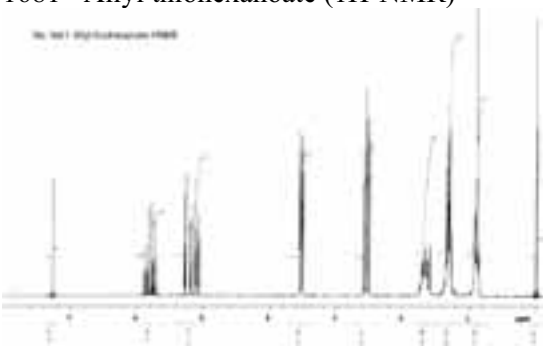
1680 S-Ethyl 2-acetylamino ethanethioate (IR)



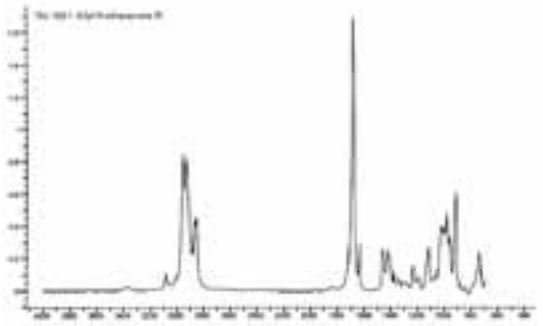
1680 S-Ethyl 2-acetylamino ethanethioate (MS)



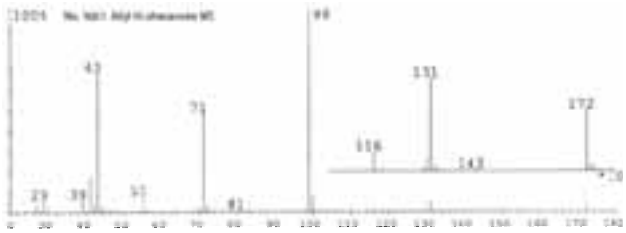
1681 Allyl thiohexanoate (1H-NMR)



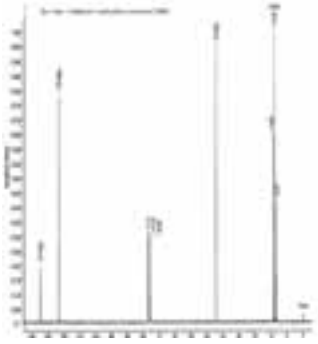
1681 Allyl thiohexanoate (IR)



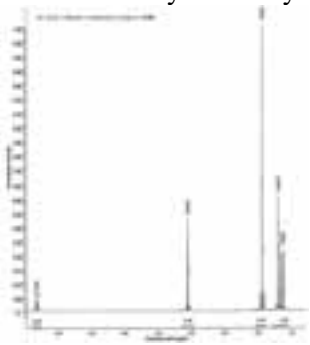
1681 Allyl thiohexanoate (MS)



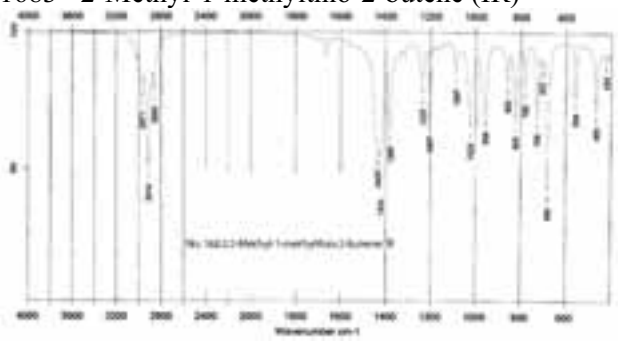
1683 2-Methyl-1-methylthio-2-butene (13C-NMR)



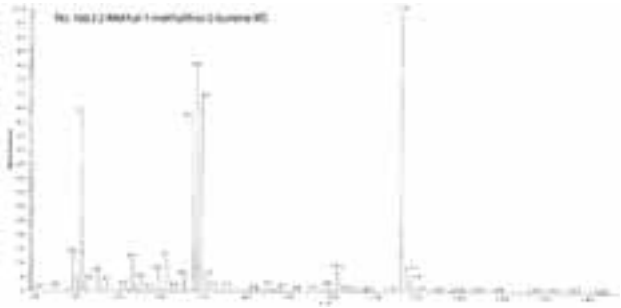
1683 2-Methyl-1-methylthio-2-butene (1H-NMR)



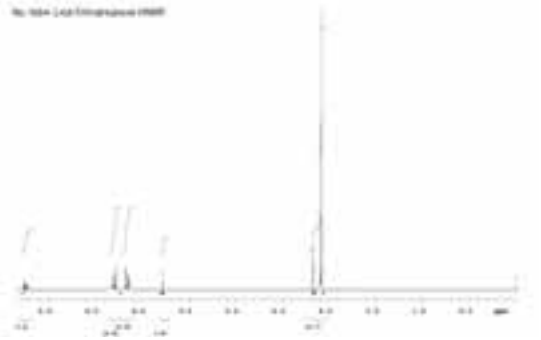
1683 2-Methyl-1-methylthio-2-butene (IR)



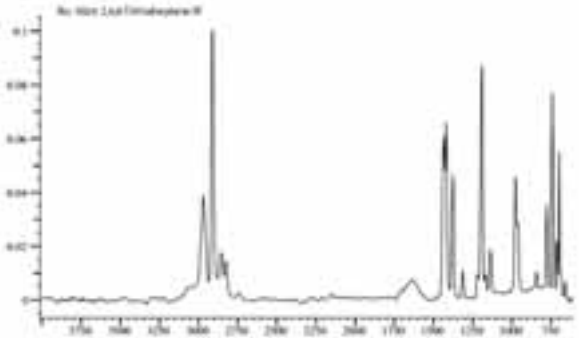
1683 2-Methyl-1-methylthio-2-butene (MS)



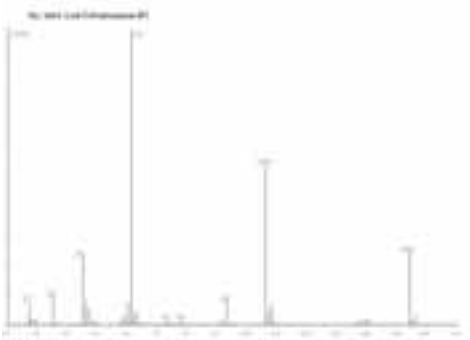
1684 2,4,6-Trithiaheptane (1H-NMR)



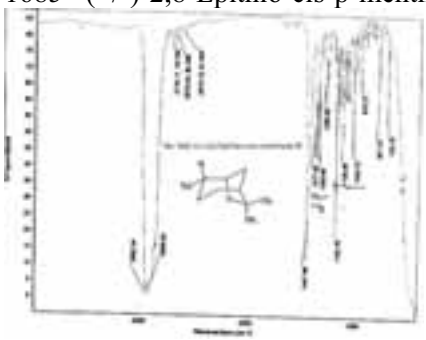
1684 2,4,6-Trithiaheptane (IR)



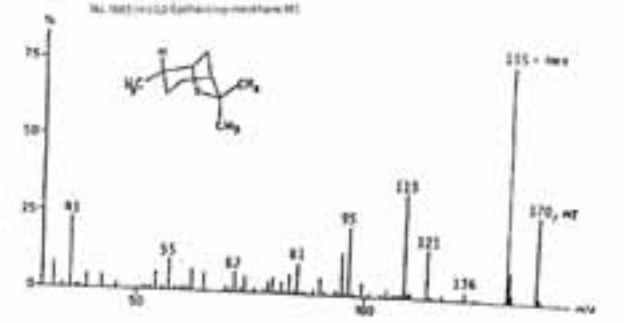
1684 2,4,6-Trithiaheptane (MS)



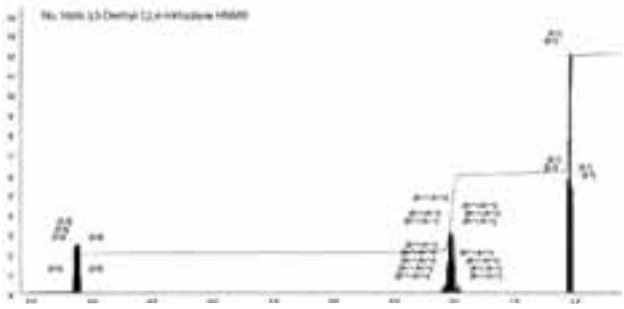
1685 (+/-)-2,8-Epithio-cis-p-menthane (IR)



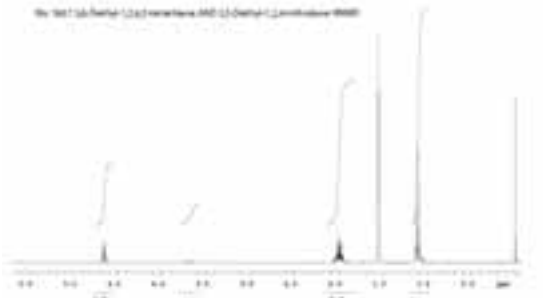
1685 (+/-)-2,8-Epithio-cis-p-menthane (MS)



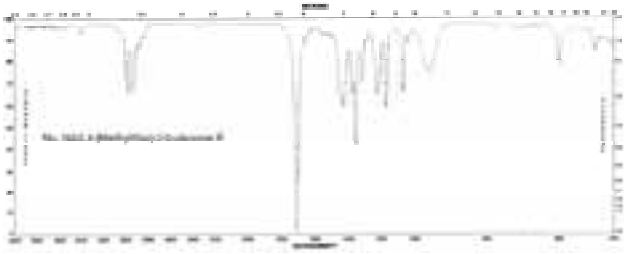
1686 3,5-Diethyl-1,2,4-trithiolane (1H-NMR)



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

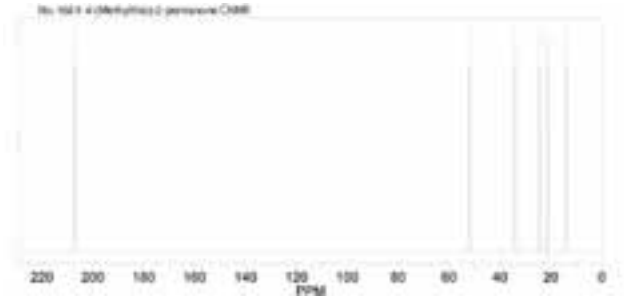


1688 3-(Methylthio)-2-butanone (IR)

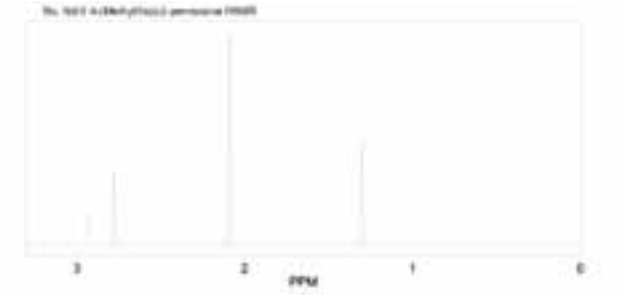


1688 3-(Methylthio)-2-butanone (NMR)

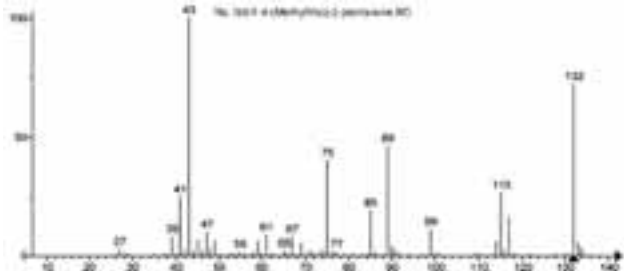
1689 4-(Methylthio)-2-pentanone (13C-NMR)



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

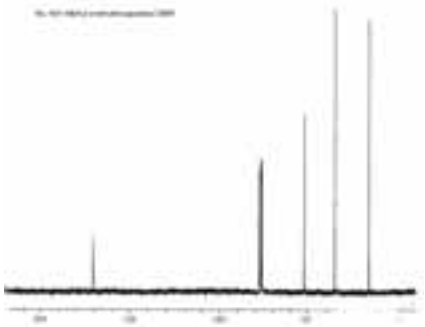


1689 4-(Methylthio)-2-pentanone (MS)

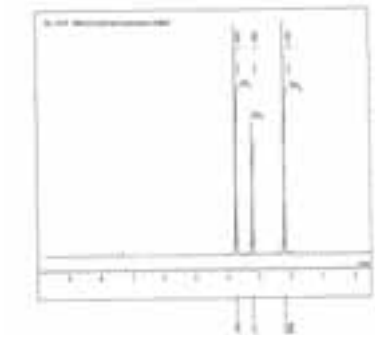


1690 Methyl 3-(methylthio)butanoate (1H-NMR)

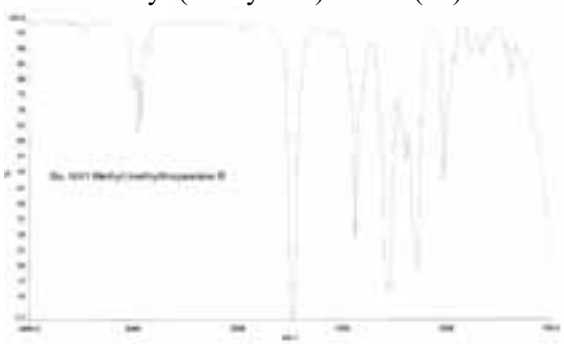
1691 Methyl (methylthio)acetate (13C-NMR)



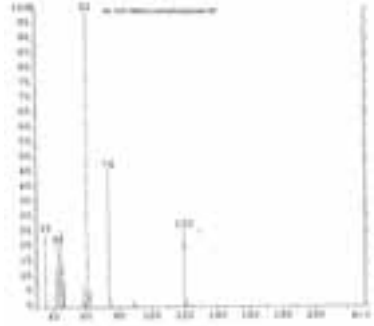
1691 Methyl (methylthio)acetate (1H-NMR)



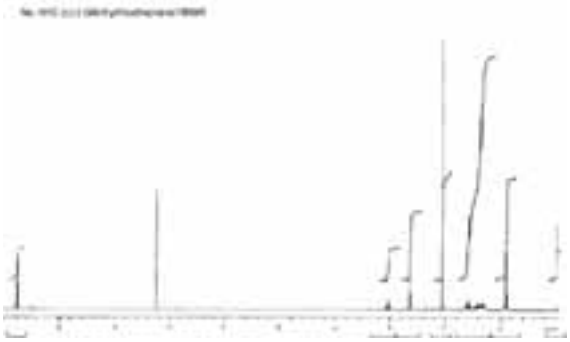
1691 Methyl (methylthio)acetate (IR)



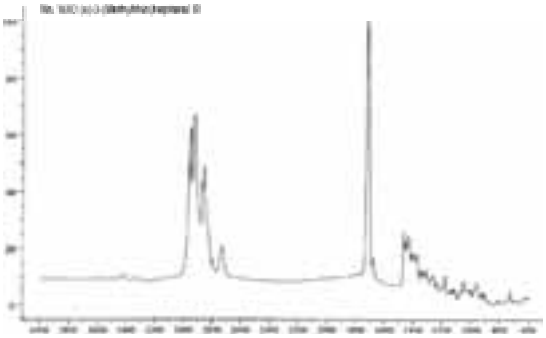
1691 Methyl (methylthio)acetate (MS)



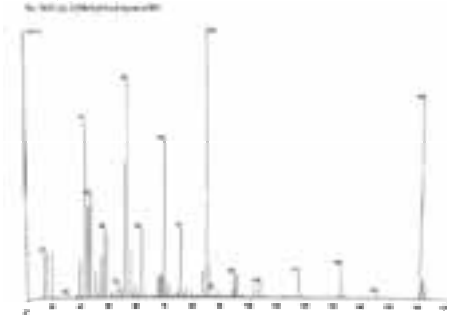
1692 (+/-)-3-(Methylthio)heptanal (1H-NMR)



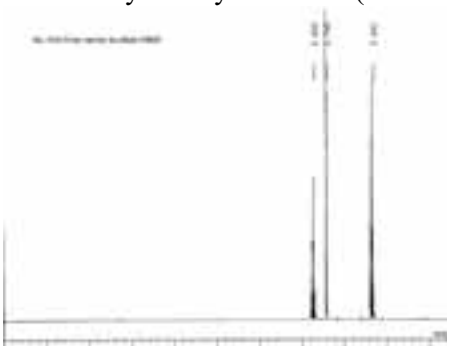
1692 (+/-)-3-(Methylthio)heptanal (IR)



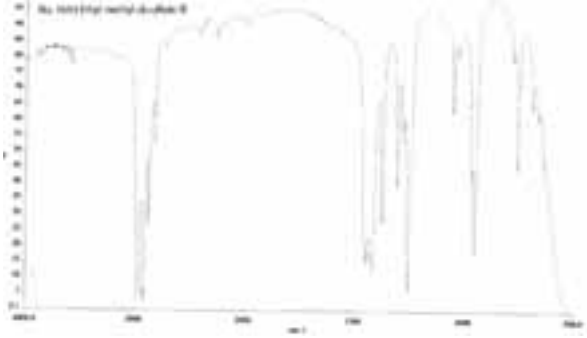
1692 (+/-)-3-(Methylthio)heptanal (MS)



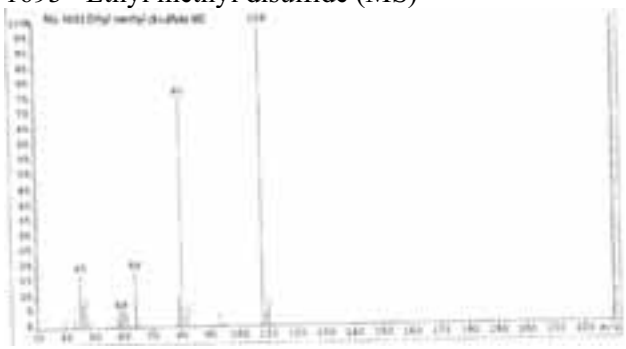
1693 Ethyl methyl disulfide (1H-NMR)



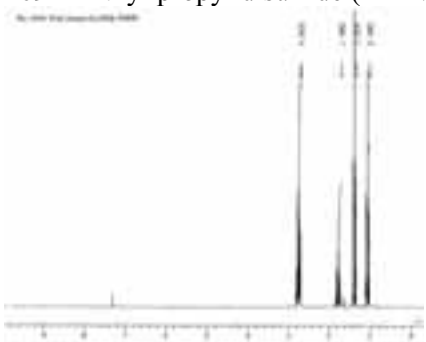
1693 Ethyl methyl disulfide (IR)



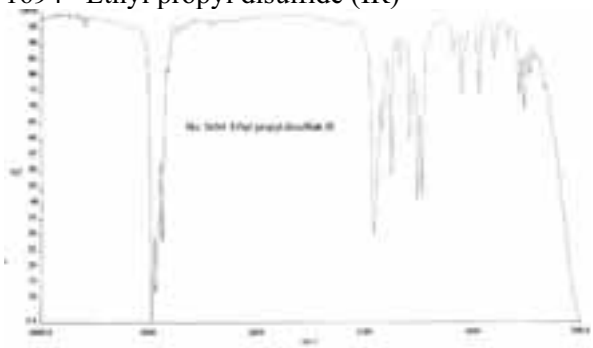
1693 Ethyl methyl disulfide (MS)



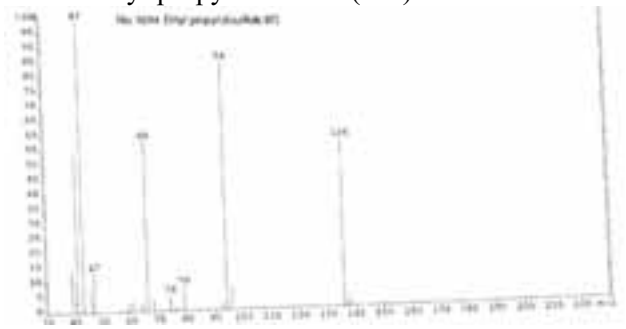
1694 Ethyl propyl disulfide (1H-NMR)



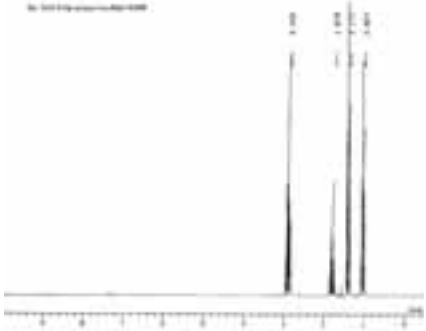
1694 Ethyl propyl disulfide (IR)



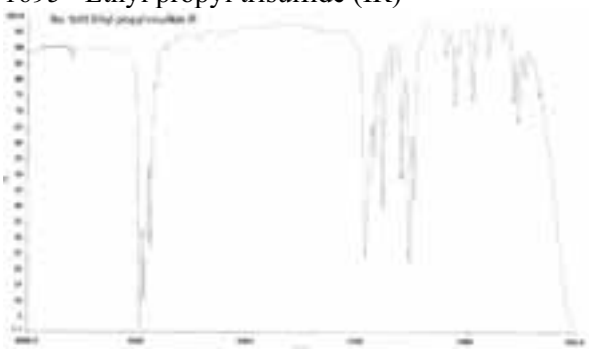
1694 Ethyl propyl disulfide (MS)



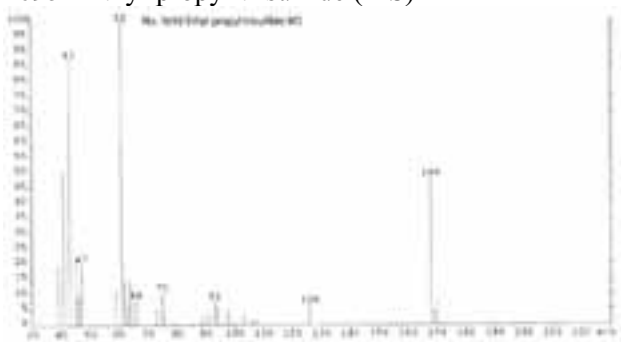
1695 Ethyl propyl trisulfide (1H-NMR)



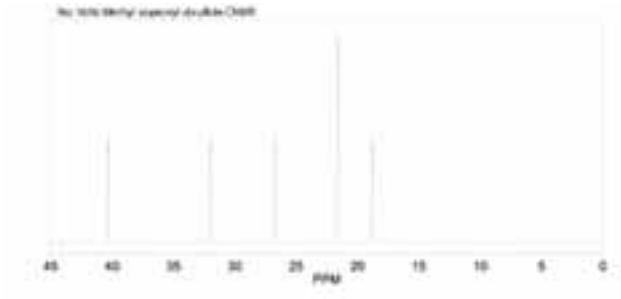
1695 Ethyl propyl trisulfide (IR)



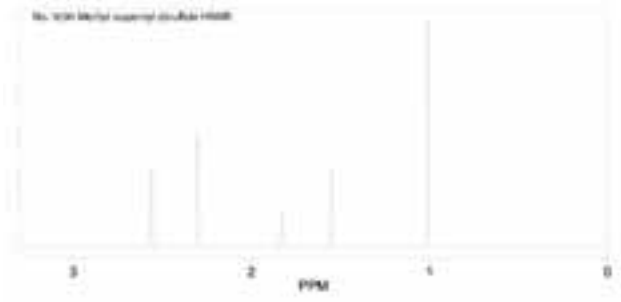
1695 Ethyl propyl trisulfide (MS)



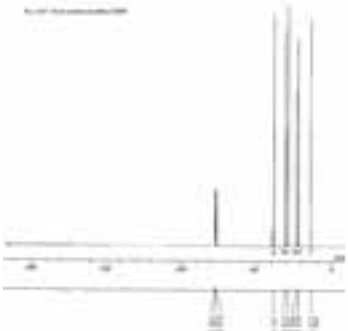
1696 Methyl isopentyl disulfide (13C-NMR)



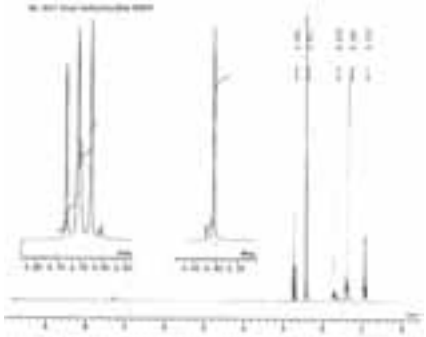
1696 Methyl isopentyl disulfide (1H-NMR)



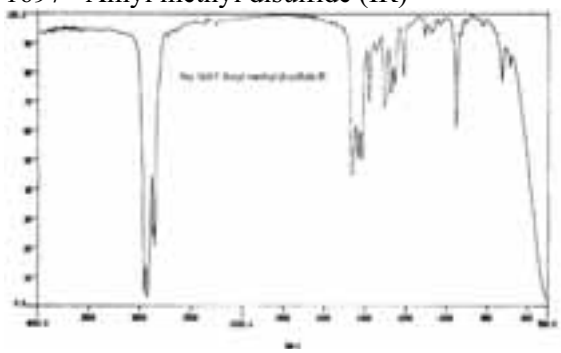
1697 Amyl methyl disulfide (13C-NMR)



1697 Amyl methyl disulfide (1H-NMR)



1697 Amyl methyl disulfide (IR)



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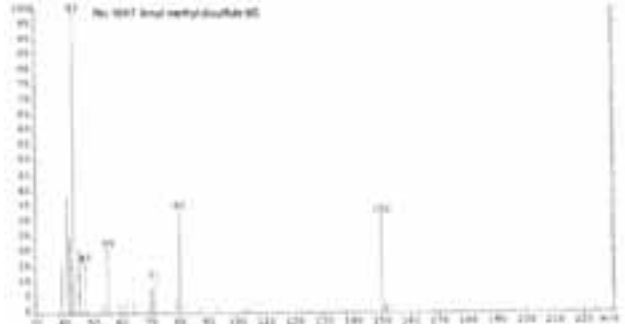
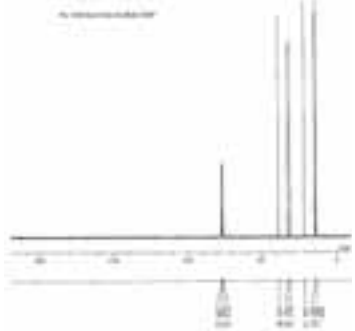
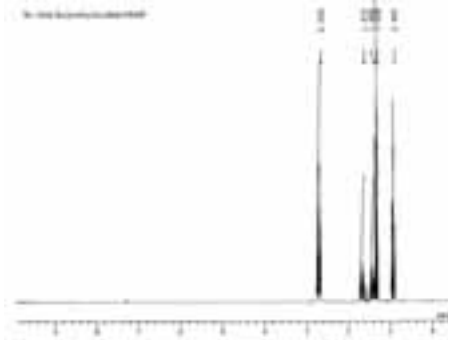


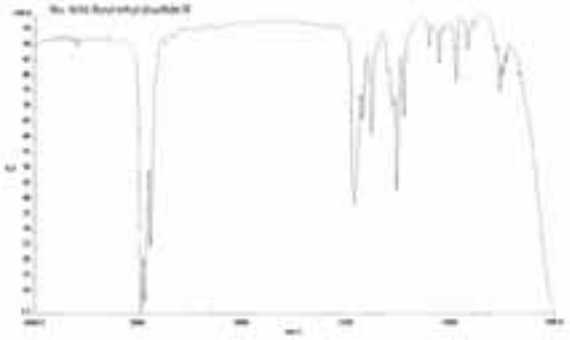
1698 Butyl ethyl disulfide (13C-NMR)



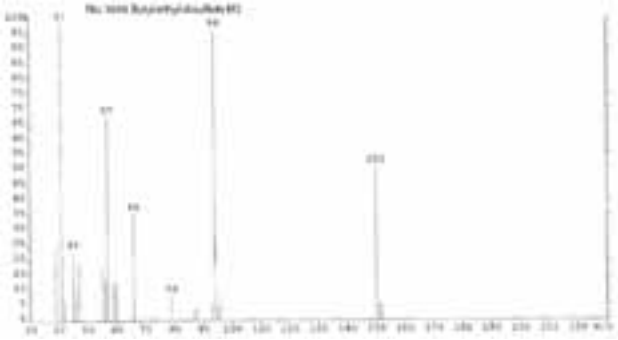
1698 Butyl ethyl disulfide (1H-NMR)



1698 Butyl ethyl disulfide (IR)



1698 Butyl ethyl disulfide (MS)



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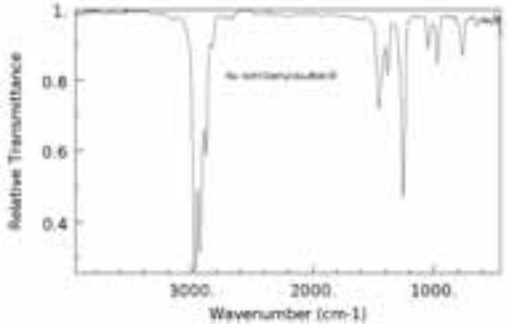

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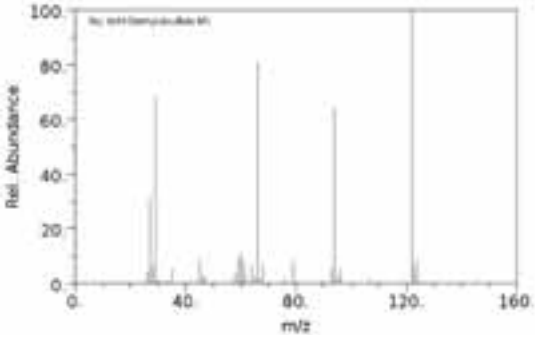
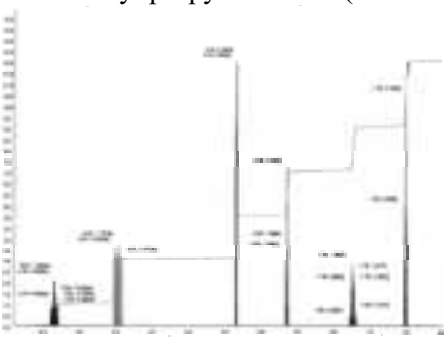
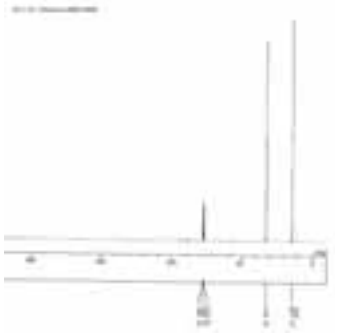


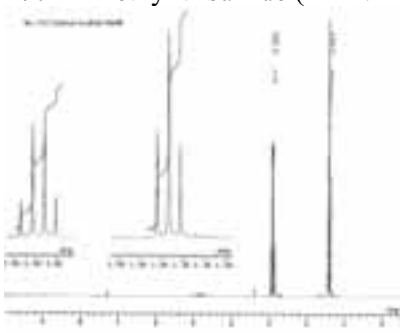
1700 Allyl propyl disulfide (1H-NMR)



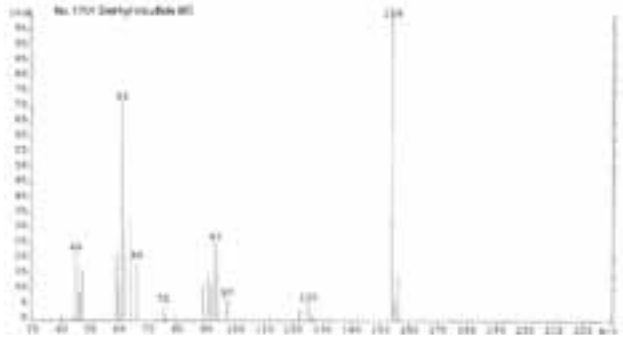
1701 Diethyl trisulfide (13C-NMR)



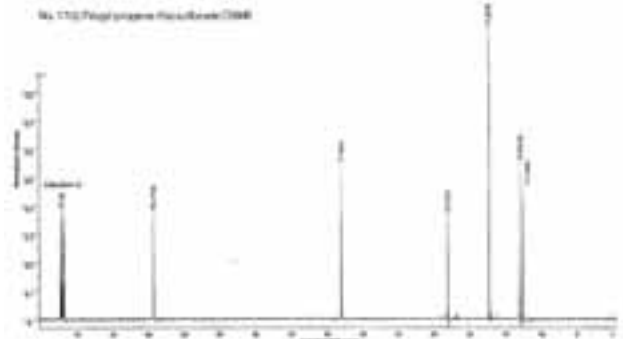
1701 Diethyl trisulfide (1H-NMR)



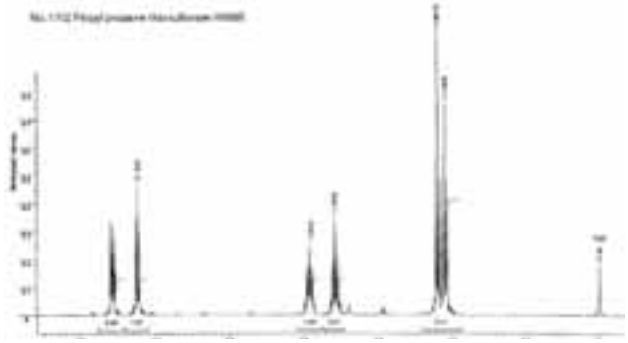
1701 Diethyl trisulfide (MS)



1702 Propyl propane thiosulfonate (13C-NMR)



1702 Propyl propane thiosulfonate (1H-NMR)



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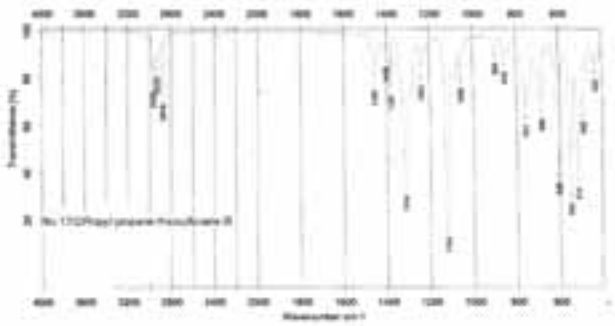
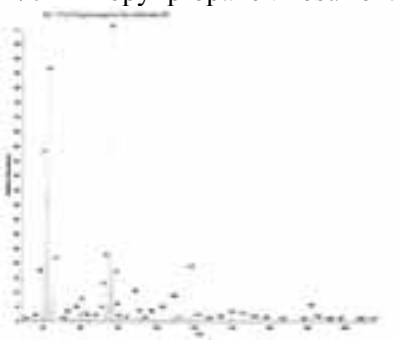
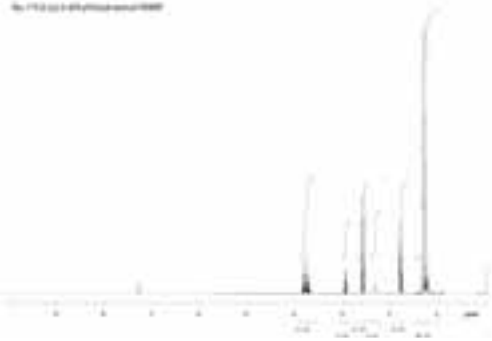


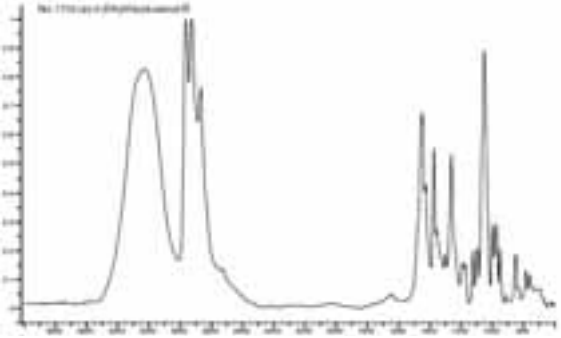
1702 Propyl propane thiosulfonate (MS)



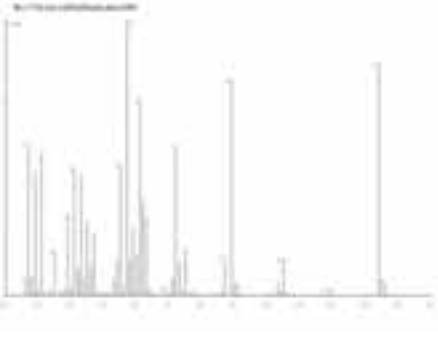
1703 (+/-)-3-(Ethylthio)butanol (1H-NMR)



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



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

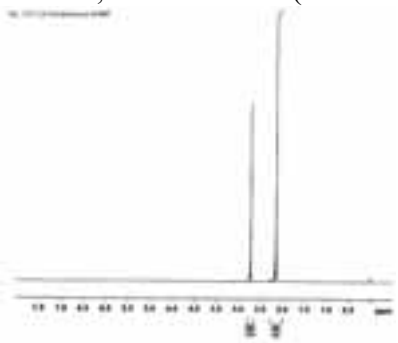


1704 Hexyl 3-mercaptobutanoate (1H-NMR)

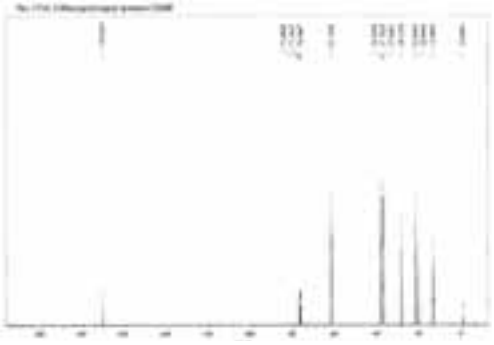
1705 (+/-)-3-Mercapto-1-butyl acetate (1H-NMR)

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

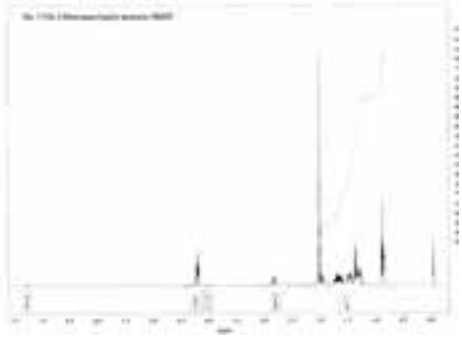
1707 2,5-Dithiahexane (1H-NMR)



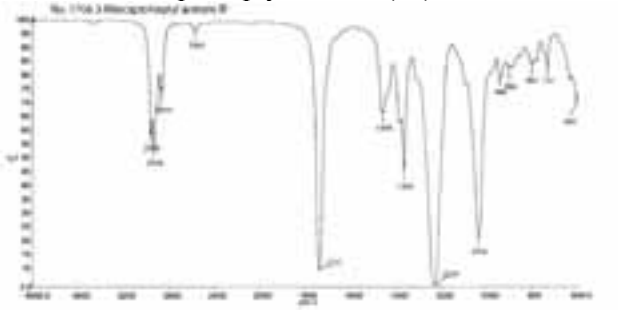
1708 3-Mercaptoheptyl acetate (13C-NMR)



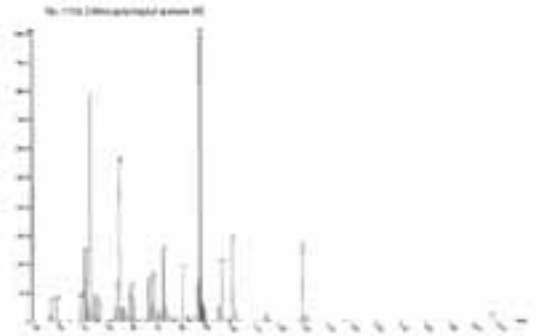
1708 3-Mercaptoheptyl acetate (1H-NMR)



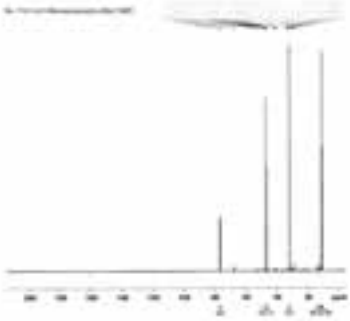
1708 3-Mercaptoheptyl acetate (IR)



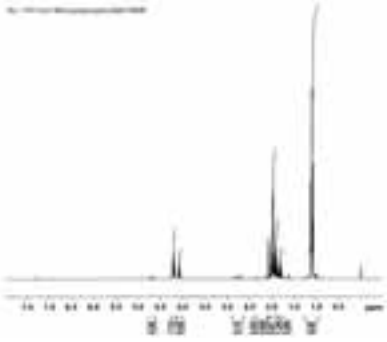
1708 3-Mercaptoheptyl acetate (MS)



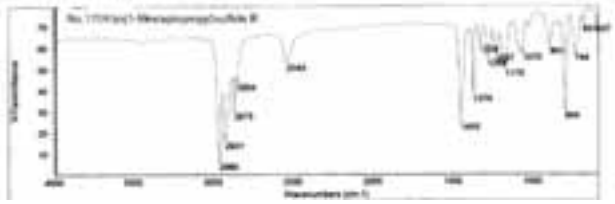
1709 bis(1-Mercaptopropyl)sulfide (13C-NMR)



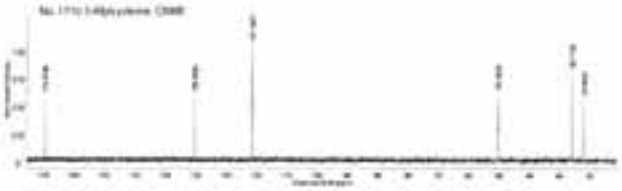
1709 bis(1-Mercaptopropyl)sulfide (1H-NMR)



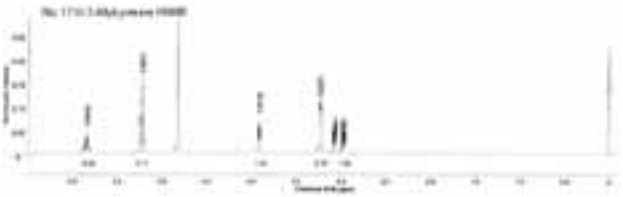
1709 bis(1-Mercaptopropyl)sulfide (IR)



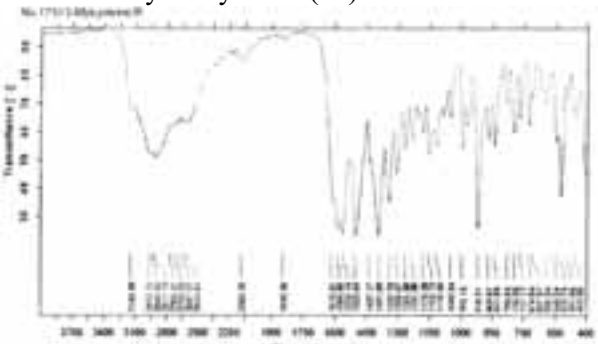
1710 S-Allyl-L-cysteine (13C-NMR)



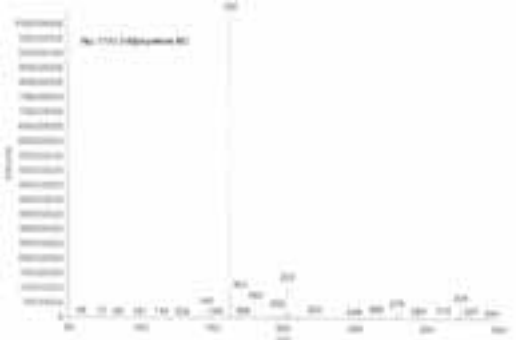
1710 S-Allyl-L-cysteine (1H-NMR)



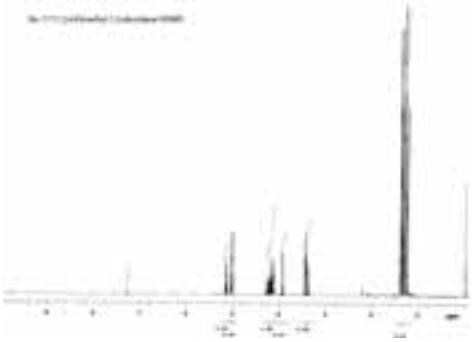
1710 S-Allyl-L-cysteine (IR)



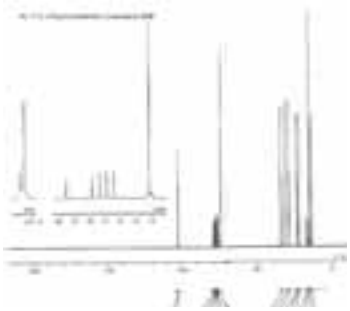
1710 S-Allyl-L-cysteine (MS)



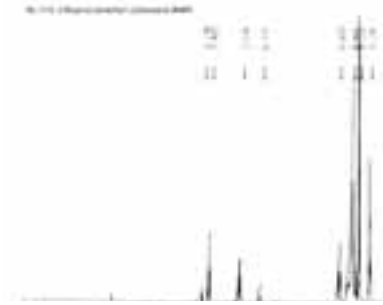
1711 2,4-Dimethyl-1,3-dioxolane (1H-NMR)



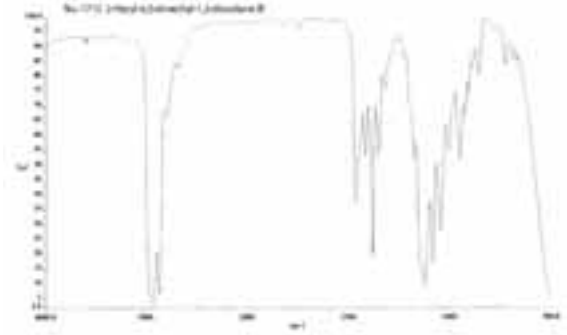
1712 2-Hexyl-4,5-dimethyl-1,3-dioxolane (13C-NMR)



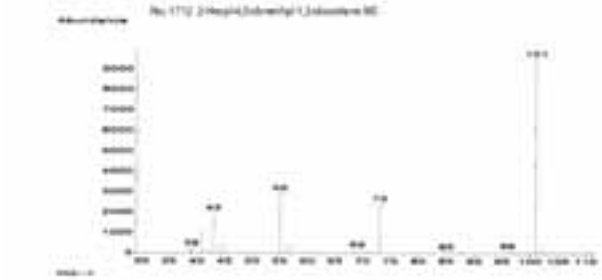
1712 2-Hexyl-4,5-dimethyl-1,3-dioxolane (1H-NMR)



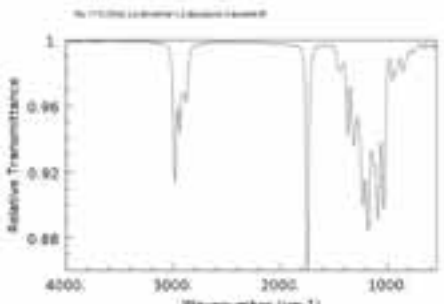
1712 2-Hexyl-4,5-dimethyl-1,3-dioxolane (IR)



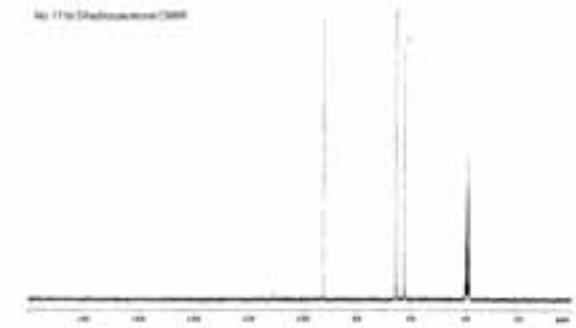
1712 2-Hexyl-4,5-dimethyl-1,3-dioxolane (MS)



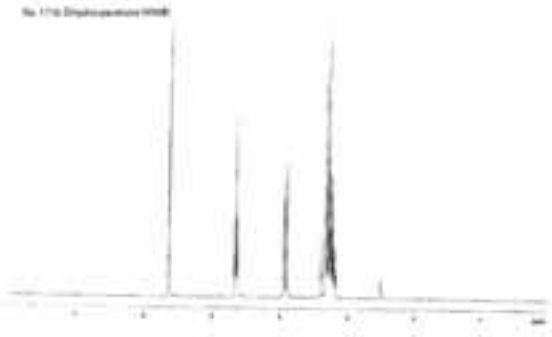
1715 cis- and trans-Ethyl 2,4-dimethyl-1,3-dioxolane-2-acetate (IR)



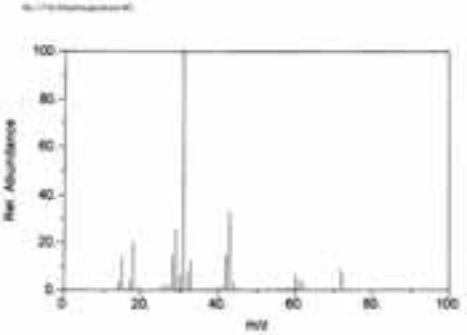
1716 Dihydroxyacetone dimer (13C-NMR)



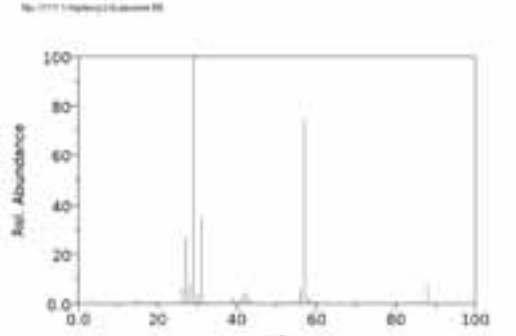
1716 Dihydroxyacetone dimer (1H-NMR)



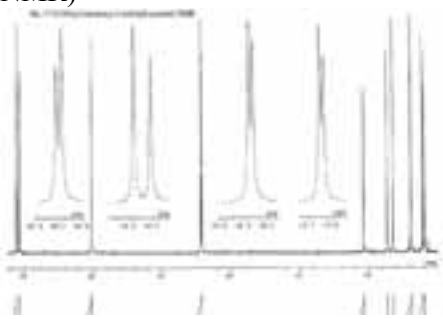
1716 Dihydroxyacetone dimer (MS)



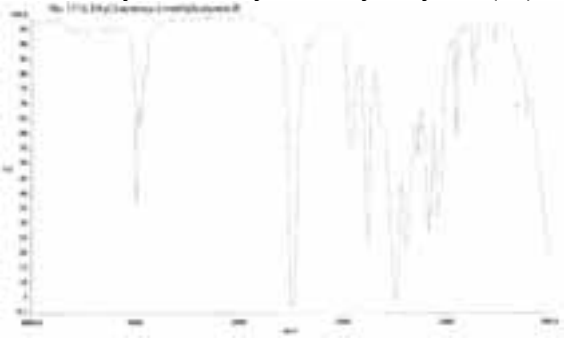
1717 1-Hydroxy-2-butanone (MS)



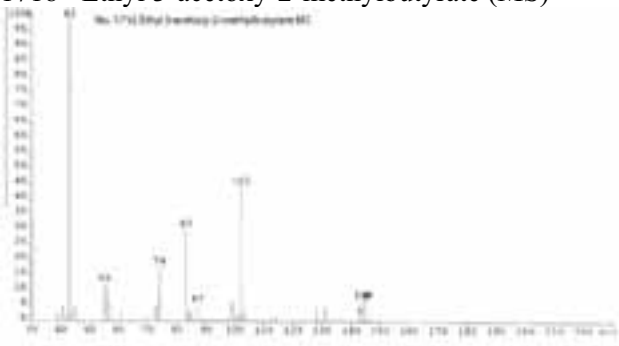
1718 Ethyl 3-acetoxy-2-methylbutyrate (13C-NMR)



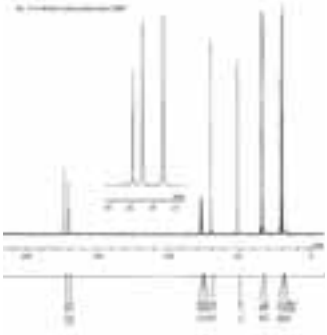
1718 Ethyl 3-acetoxy-2-methylbutyrate (IR)



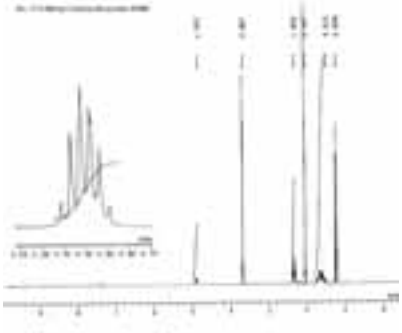
1718 Ethyl 3-acetoxy-2-methylbutyrate (MS)



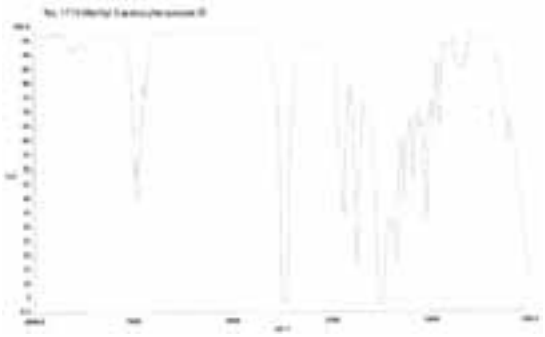
1719 Methyl 5-acetoxyhexanoate (13C-NMR)



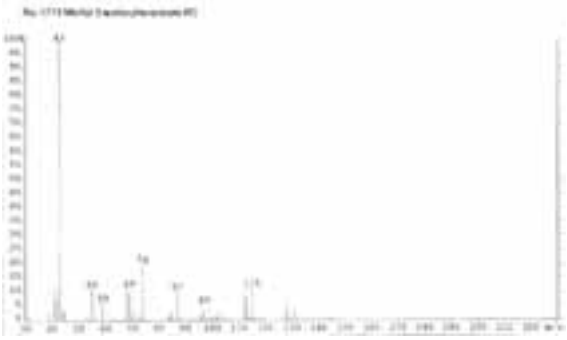
1719 Methyl 5-acetoxyhexanoate (1H-NMR)



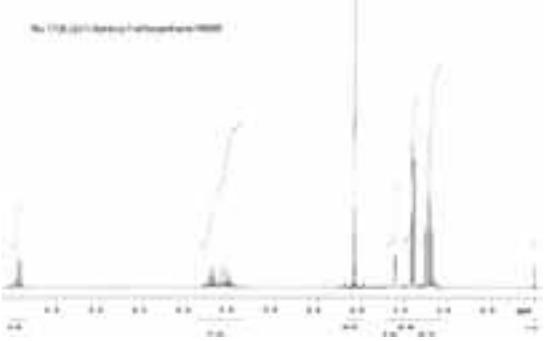
1719 Methyl 5-acetoxyhexanoate (IR)



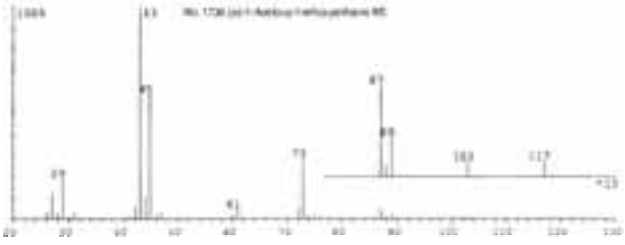
1719 Methyl 5-acetoxyhexanoate (MS)



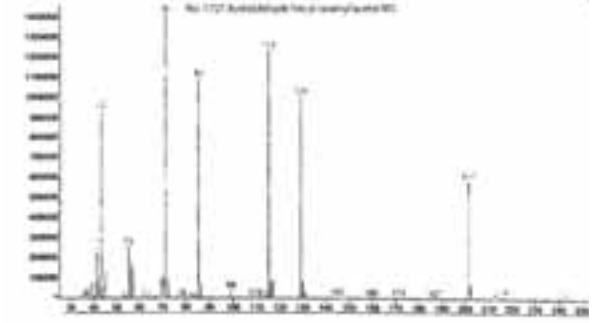
1726 (+/-)-1-Acetoxy-1-ethoxyethane (1H-NMR)



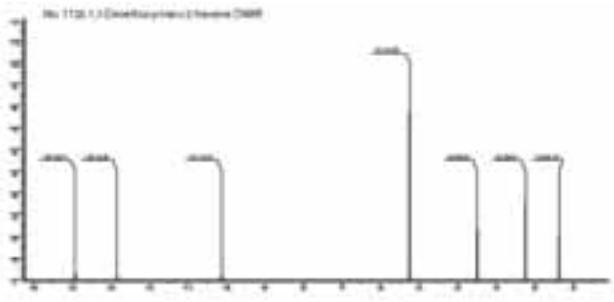
1726 (+/-)-1-Acetoxy-1-ethoxyethane (MS)



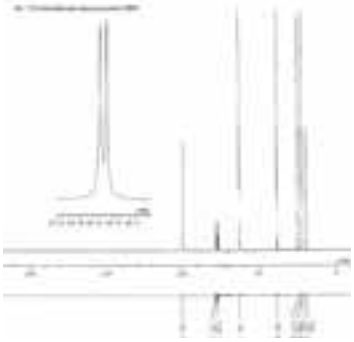
1727 Acetaldehyde hexyl isoamyl acetal (MS)



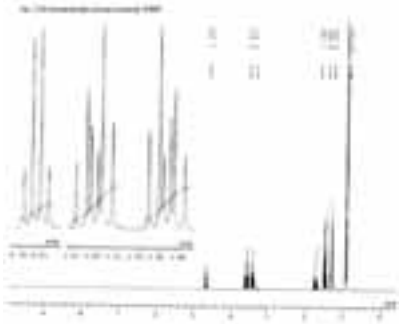
1728 1,1-Dimethoxy-trans-2-hexene (13C-NMR)



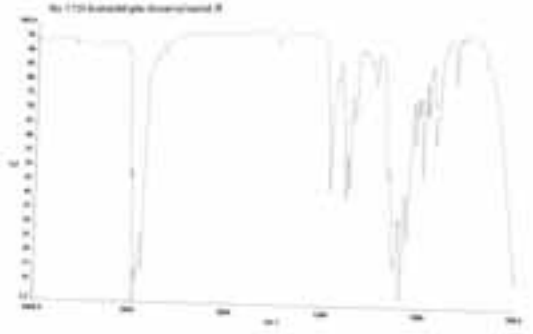
1729 Acetaldehyde diisoamyl acetal (13C-NMR)



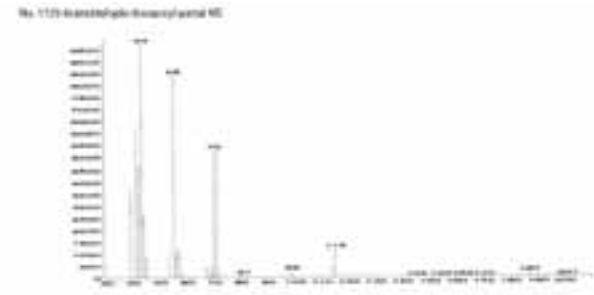
1729 Acetaldehyde diisoamyl acetal (1H-NMR)



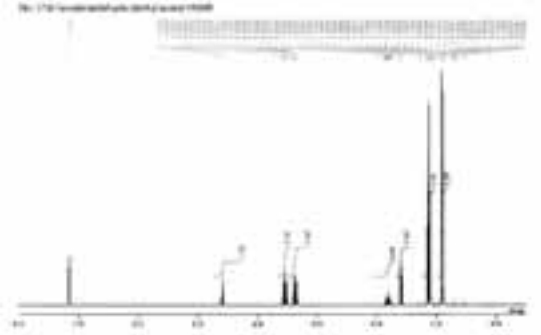
1729 Acetaldehyde diisoamyl acetal (IR)



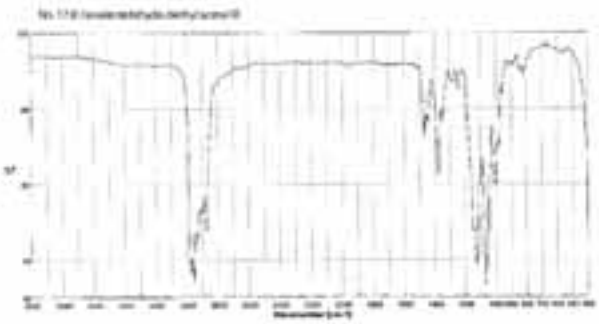
1729 Acetaldehyde diisoamyl acetal (MS)



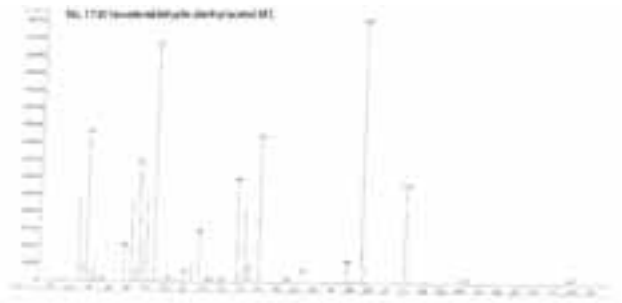
1730 Isovaleraldehyde diethyl acetal (1H-NMR)



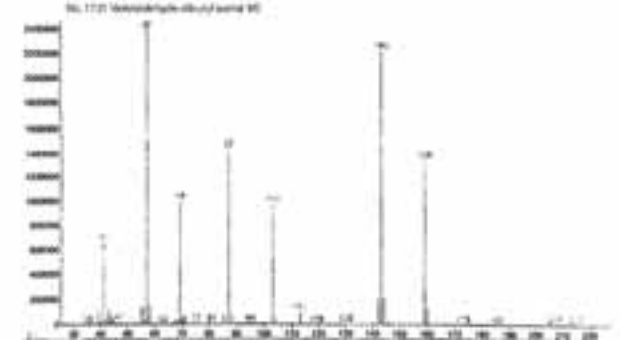
1730 Isovaleraldehyde diethyl acetal (IR)



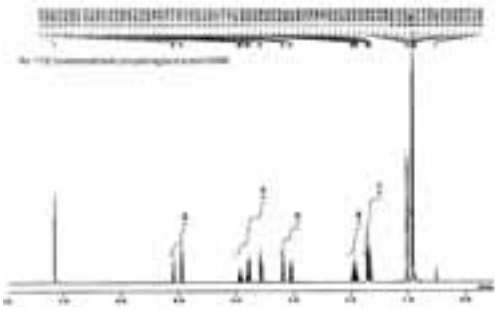
1730 Isovaleraldehyde diethyl acetal (MS)



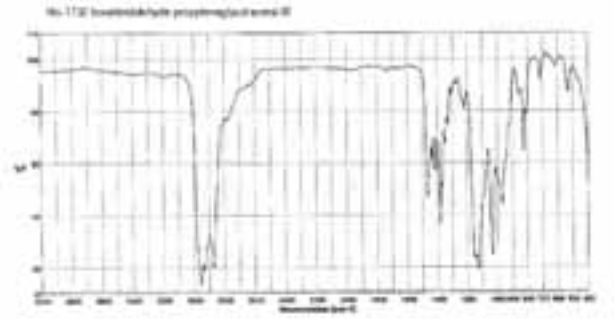
1731 Valeraldehyde dibutyl acetal (MS)



1732 Isovaleraldehyde propyleneglycol acetal (1H-NMR)

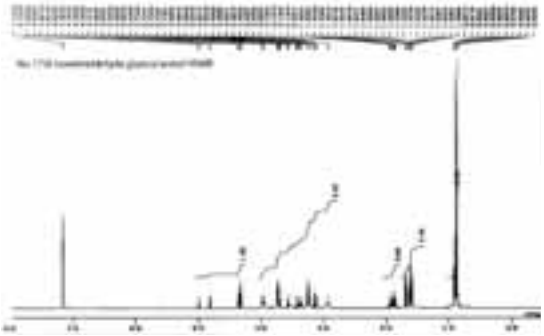


1732 Isovaleraldehyde propyleneglycol acetal (IR)

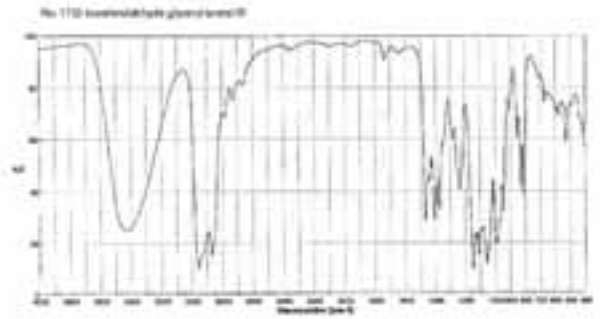


1732 Isovaleraldehyde propyleneglycol acetal (MS)

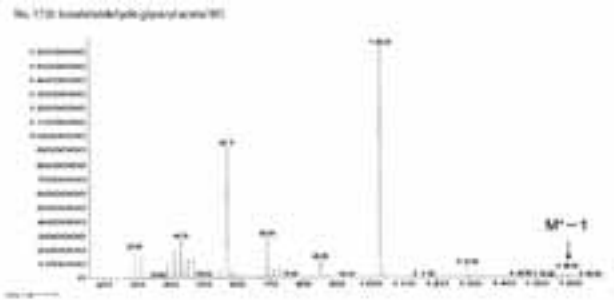
1733 Isovaleraldehyde glyceryl acetal (1H-NMR)



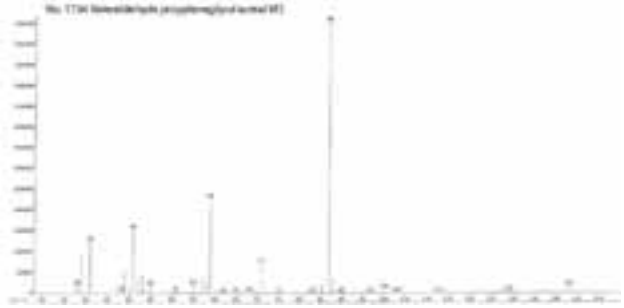
1733 Isovaleraldehyde glyceryl acetal (IR)



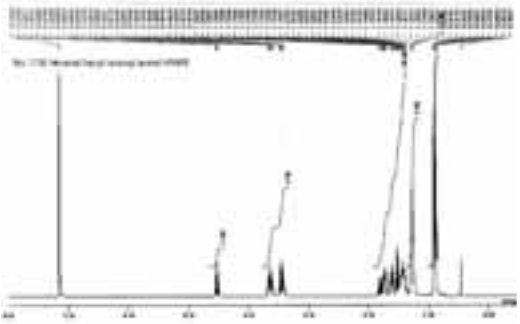
1733 Isovaleraldehyde glyceryl acetal (MS)



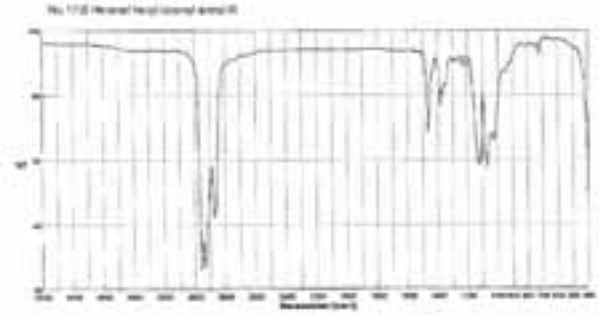
1734 Valeraldehyde propyleneglycol acetal (MS)



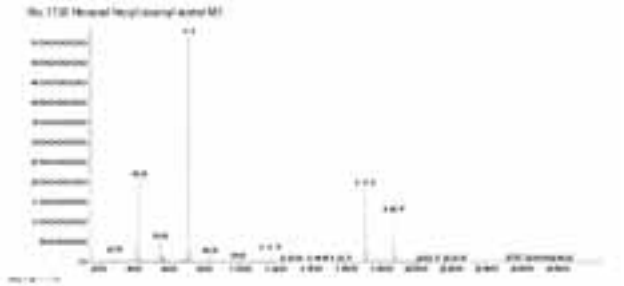
1735 Hexanal hexyl isoamyl acetal (1H-NMR)



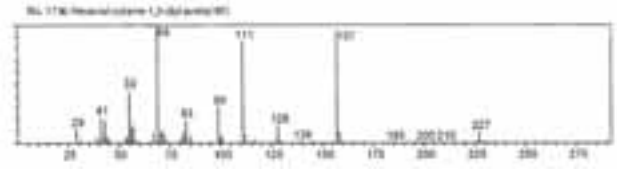
1735 Hexanal hexyl isoamyl acetal (IR)



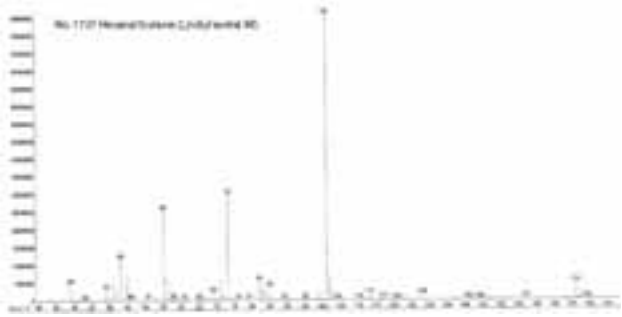
1735 Hexanal hexyl isoamyl acetal (MS)



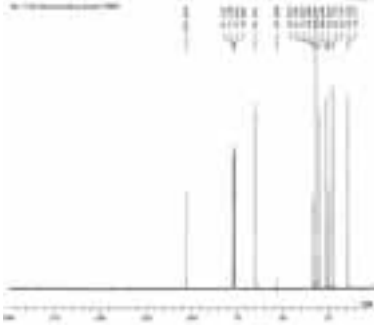
1736 Hexanal octane-1,3-diol acetal (MS)



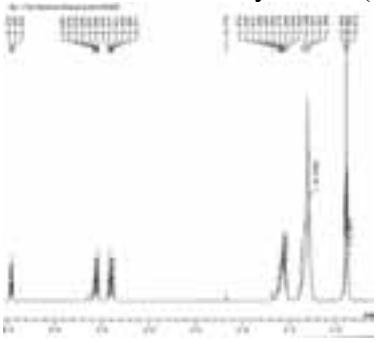
1737 Hexanal butane-2,3-diol acetal (MS)



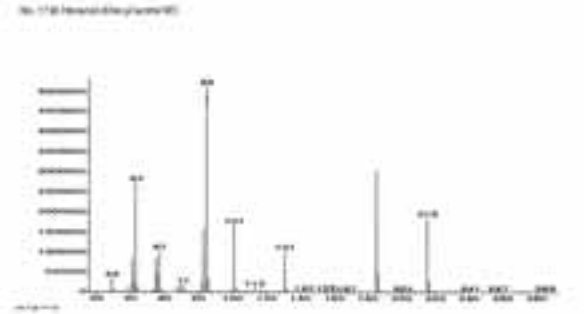
1738 Hexanal dihexyl acetal (13C-NMR)



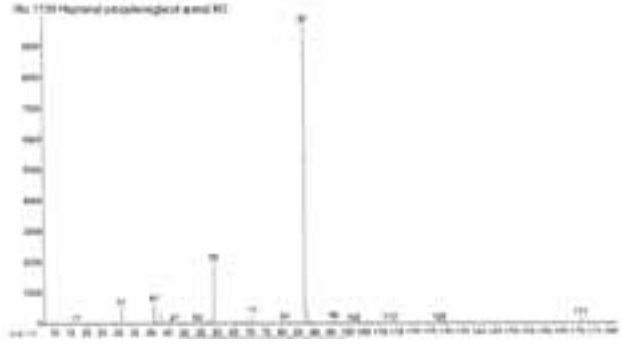
1738 Hexanal dihexyl acetal (1H-NMR)



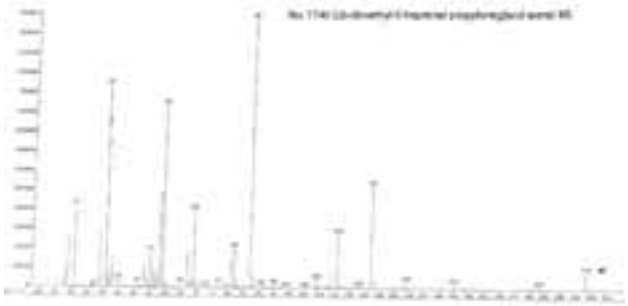
1738 Hexanal dihexyl acetal (MS)



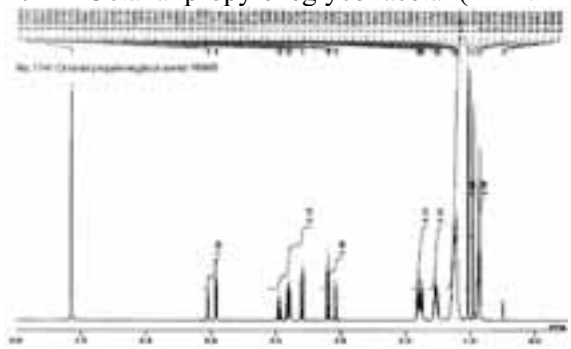
1739 Heptanal propyleneglycol acetal (MS)



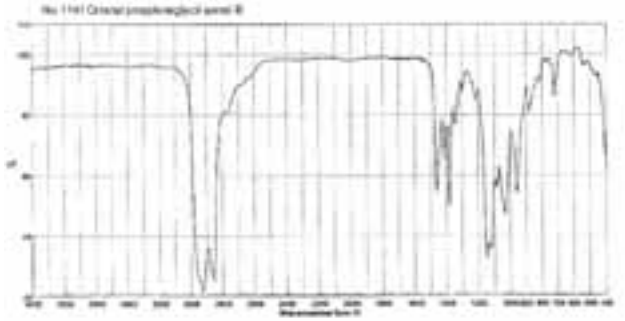
1740 2,6-Dimethyl-5-heptenal propyleneglycol acetal (MS)



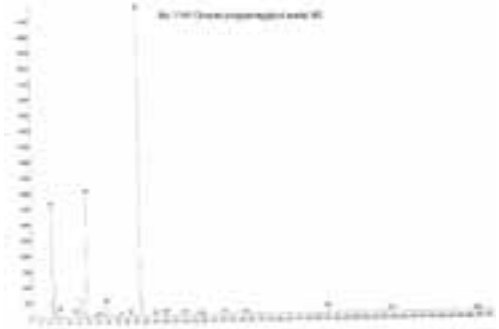
1741 Octanal propyleneglycol acetal (1H-NMR)



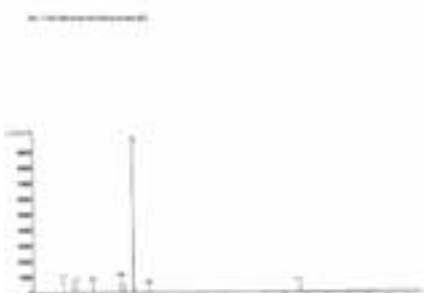
1741 Octanal propyleneglycol acetal (IR)



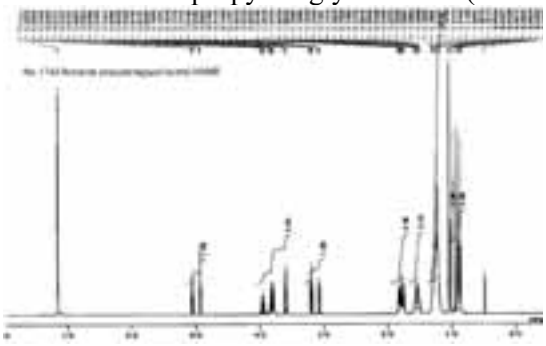
1741 Octanal propyleneglycol acetal (MS)



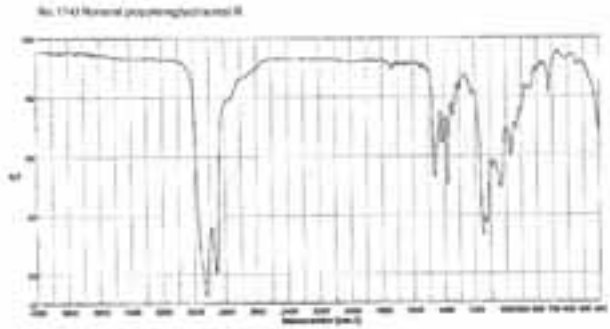
1742 Nonanal dimethyl acetal (MS)



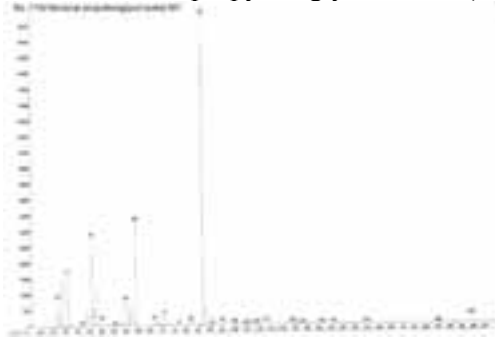
1743 Nonanal propyleneglycol acetal (1H-NMR)



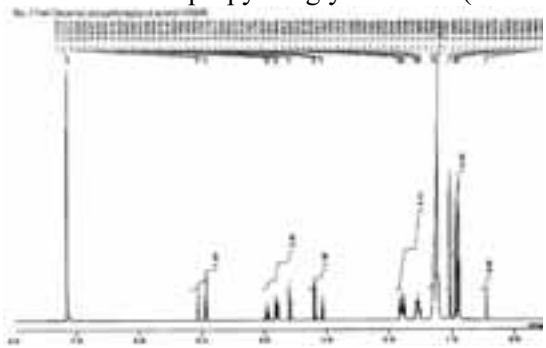
1743 Nonanal propyleneglycol acetal (IR)



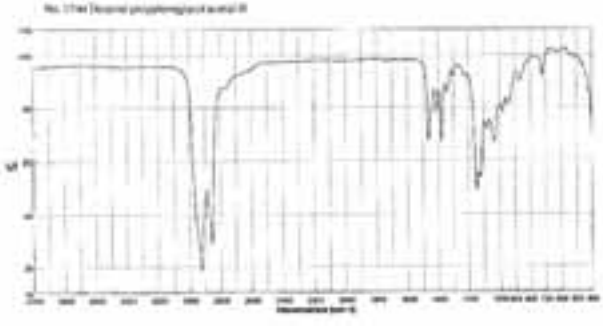
1743 Nonanal propyleneglycol acetal (MS)



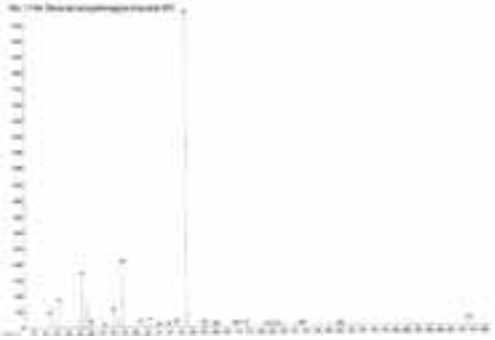
1744 Decanal propyleneglycol acetal (1H-NMR)



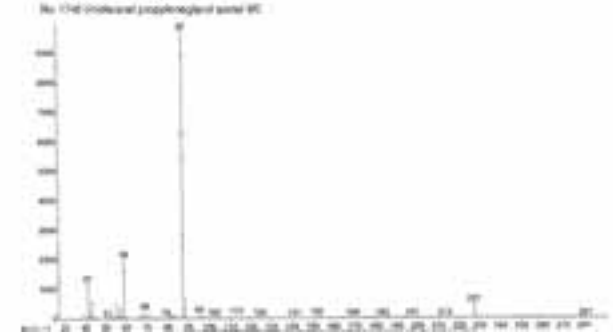
1744 Decanal propyleneglycol acetal (IR)



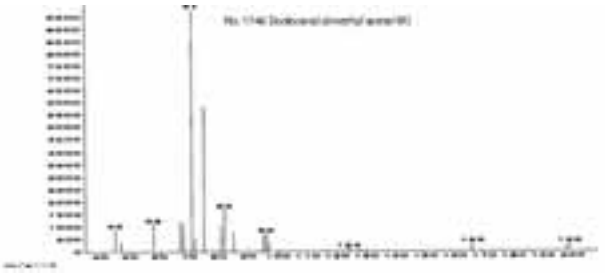
1744 Decanal propyleneglycol acetal (MS)



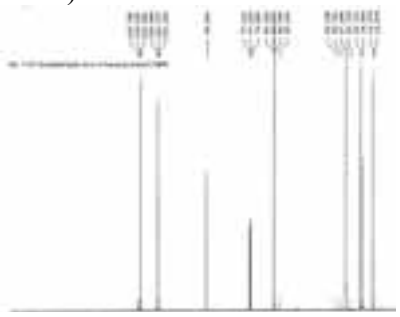
1745 Undecanal propyleneglycol acetal (MS)



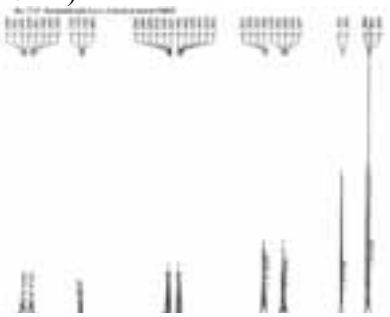
1746 Dodecanal dimethyl acetal (MS)



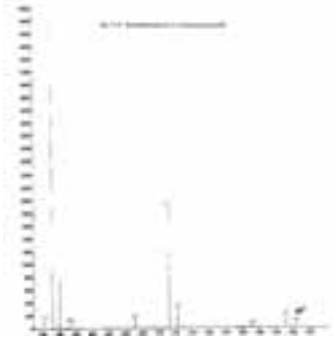
1747 Acetaldehyde di-cis-3-hexenyl acetal (13C-NMR)



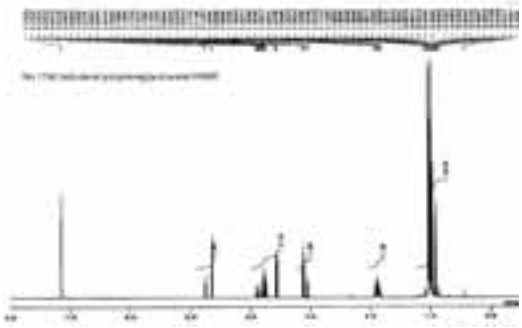
1747 Acetaldehyde di-cis-3-hexenyl acetal (1H-NMR)



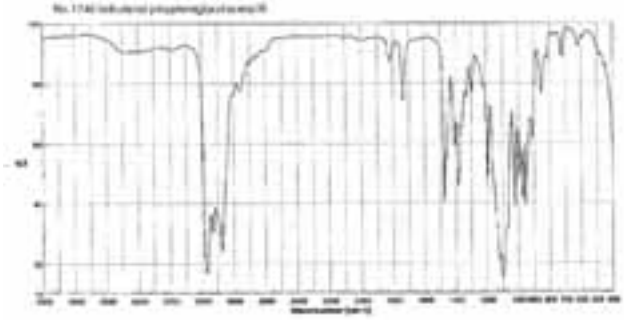
1747 Acetaldehyde di-cis-3-hexenyl acetal (MS)



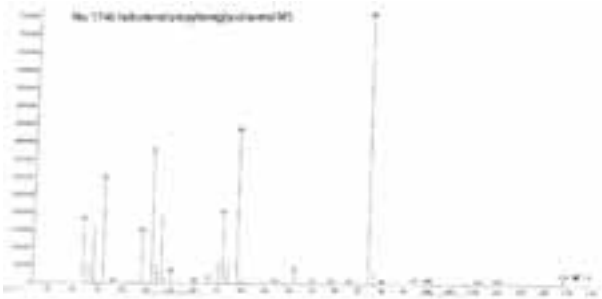
1748 Isobutanal propyleneglycol acetal (1H-NMR)



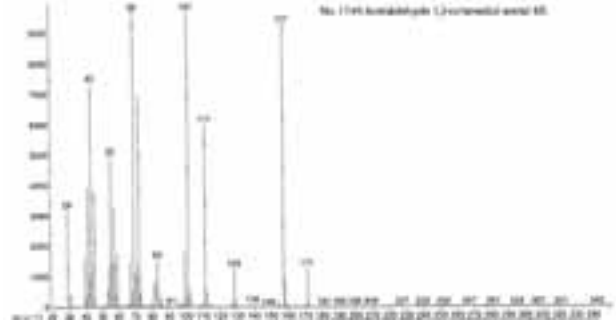
1748 Isobutanal propyleneglycol acetal (IR)



1748 Isobutanal propyleneglycol acetal (MS)

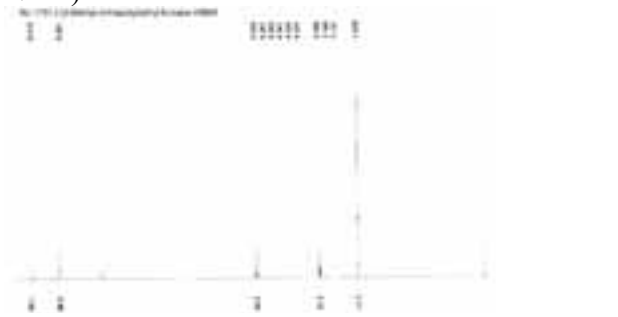


1749 Acetaldehyde 1,3-octanediol acetal (MS)

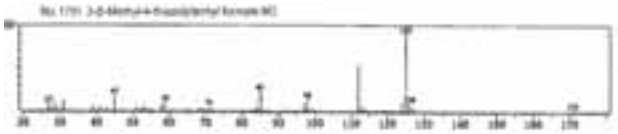


1750 1-(3-Hydroxy-5-methyl-2-thienyl)ethanone (1H-NMR)

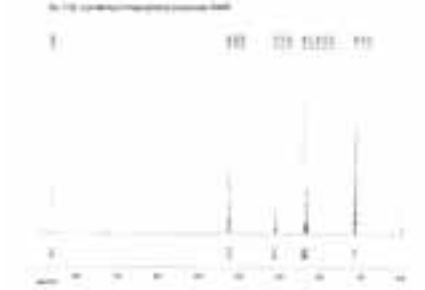
1751 2-(5-Methyl-4-thiazolyl)ethyl formate (1H-NMR)



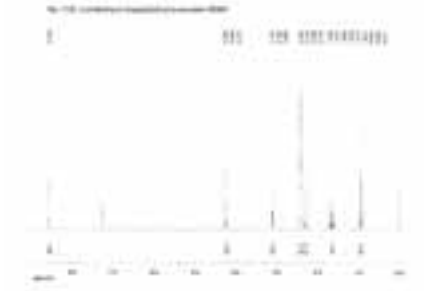
1751 2-(5-Methyl-4-thiazolyl)ethyl formate (MS)



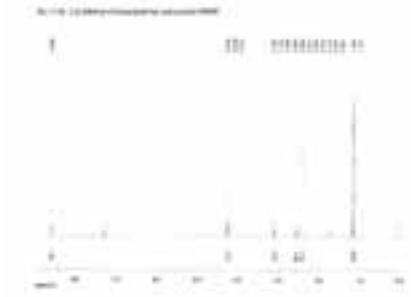
1752 2-(4-Methyl-5-thiazolyl)ethyl propionate (1H-NMR)



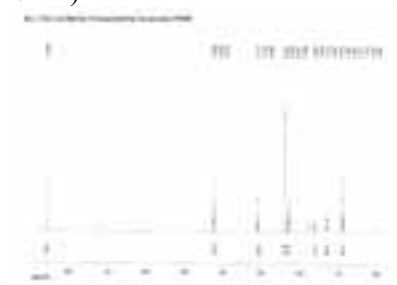
1753 2-(4-Methyl-5-thiazolyl)ethyl butanoate (1H-NMR)



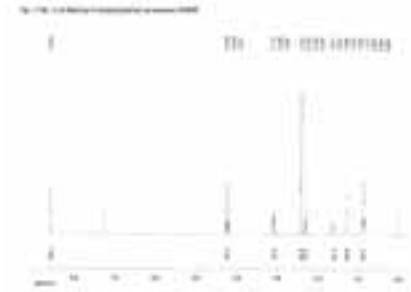
1754 2-(4-Methyl-5-thiazolyl)ethyl isobutyrate (1H-NMR)



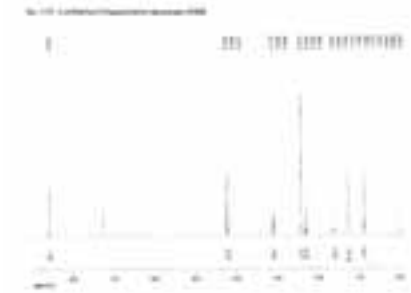
1755 2-(4-Methyl-5-thiazolyl)ethyl hexanoate (1H-NMR)



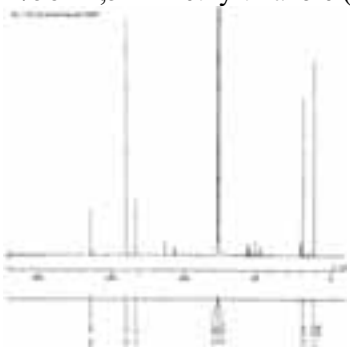
1756 2-(4-Methyl-5-thiazolyl)ethyl octanoate (1H-NMR)



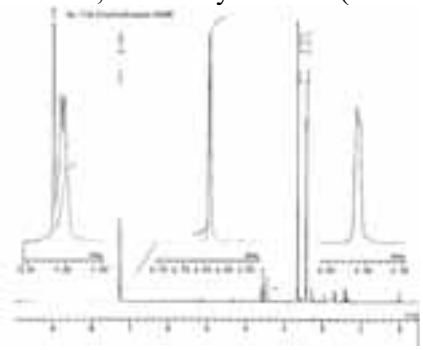
1757 2-(4-Methyl-5-thiazolyl)ethyl decanoate (1H-NMR)



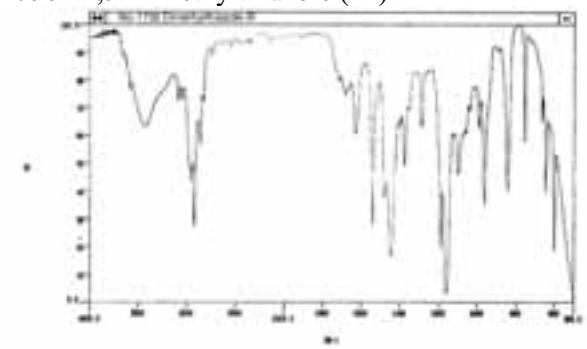
1758 2,5-Dimethylthiazole (13C-NMR)



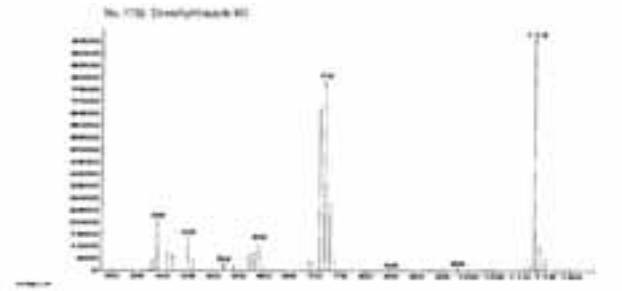
1758 2,5-Dimethylthiazole (1H-NMR)



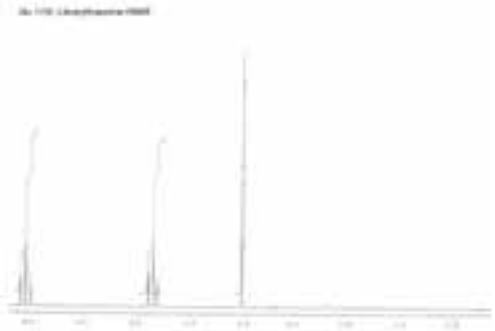
1758 2,5-Dimethylthiazole (IR)



1758 2,5-Dimethylthiazole (MS)



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



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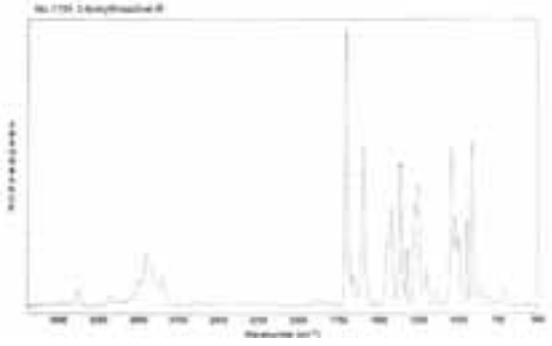
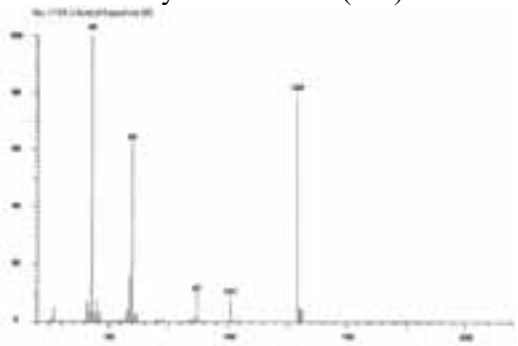
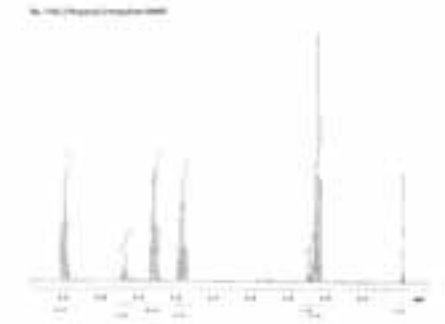


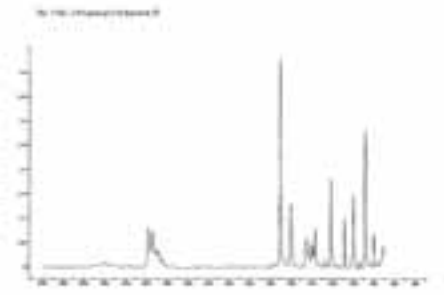
1759 2-Acetyl-2-thiazoline (MS)



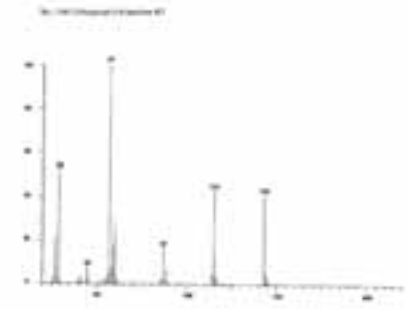
1760 2-Propionyl-2-thiazoline (1H-NMR)



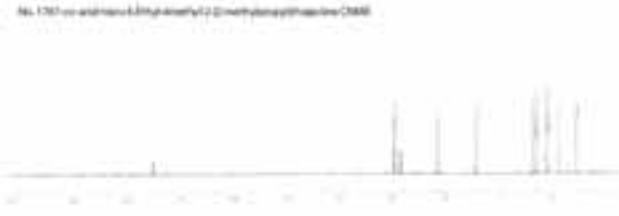
1760 2-Propionyl-2-thiazoline (IR)



1760 2-Propionyl-2-thiazoline (MS)

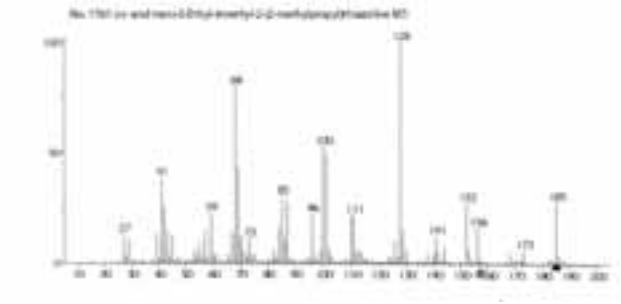


1761 cis- and trans-5-Ethyl-4-methyl-2-(2-methylpropyl)-thiazoline (13C-NMR)

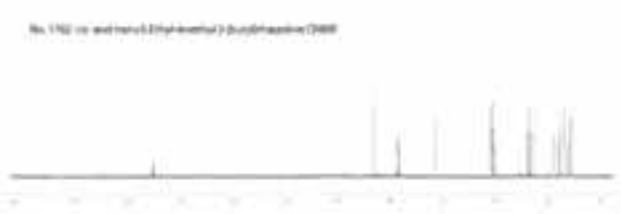


1761 cis- and trans-5-Ethyl-4-methyl-2-(2-methylpropyl)-thiazoline (1H-NMR)

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

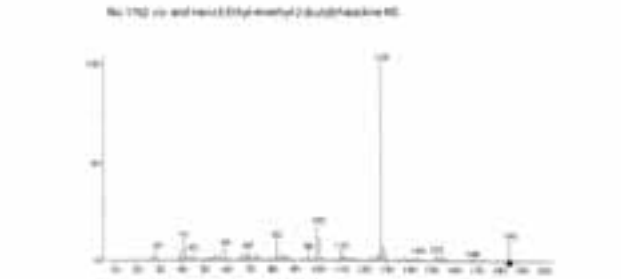


1762 cis- and trans-5-Ethyl-4-methyl-2-(1-methylpropyl)-thiazoline (13C-NMR)

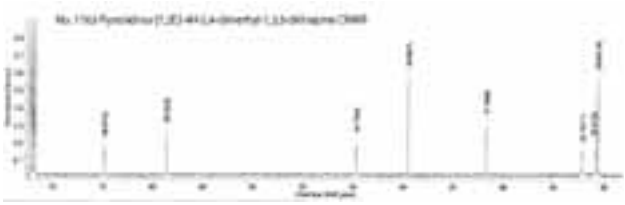


1762 cis- and trans-5-Ethyl-4-methyl-2-(1-methylpropyl)-thiazoline (1H-NMR)

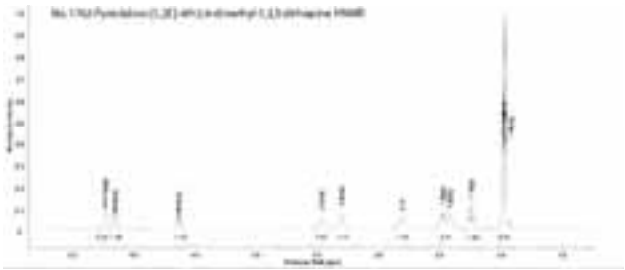
1762 cis- and trans-5-Ethyl-4-methyl-2-(1-methylpropyl)-thiazoline (MS)



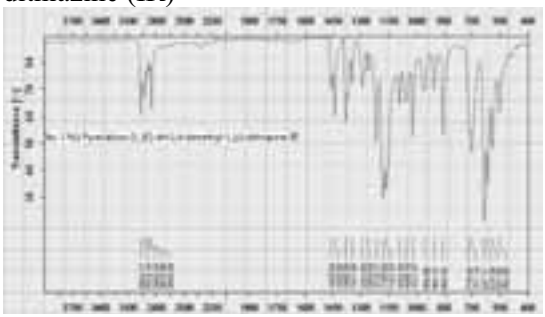
1763 Pyrrolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-dithiazine (13C-NMR)



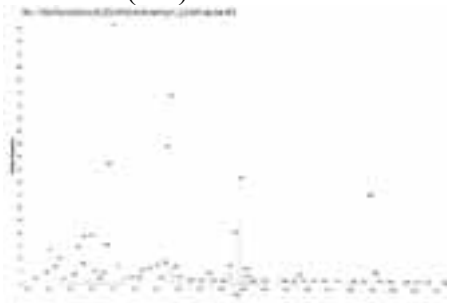
1763 Pyrrolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-dithiazine (1H-NMR)



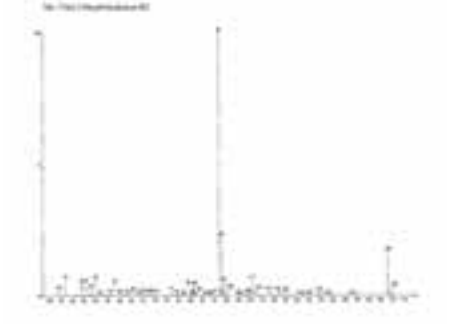
1763 Pyrrolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-dithiazine (IR)



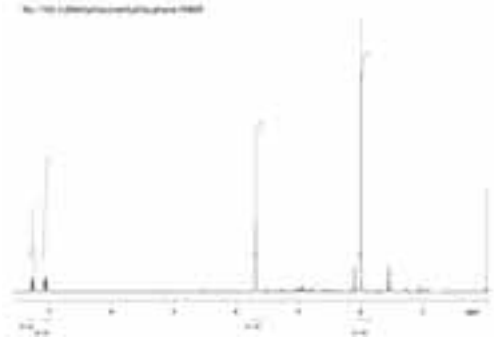
1763 Pyrrolidino-[1,2e]-4H-2,4-dimethyl-1,3,5-dithiazine (MS)



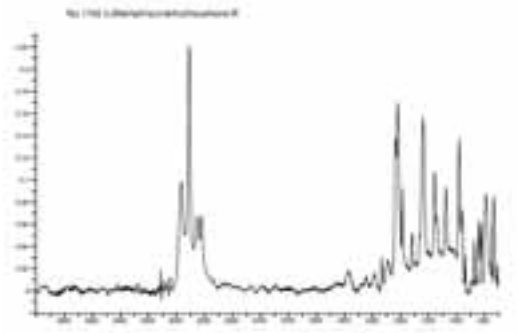
1764 2-Hexylthiophene (MS)



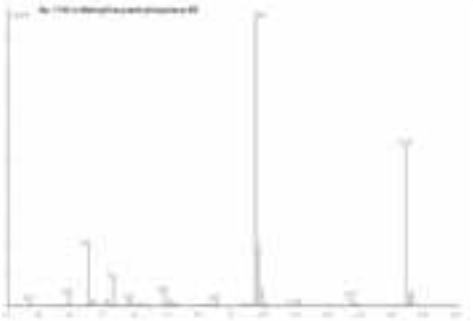
1765 3-(Methylthio)methylthiophene (1H-NMR)



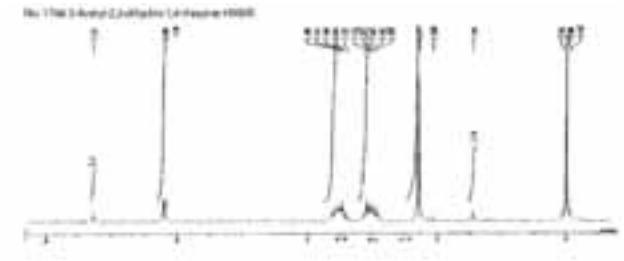
1765 3-(Methylthio)methylthiophene (IR)



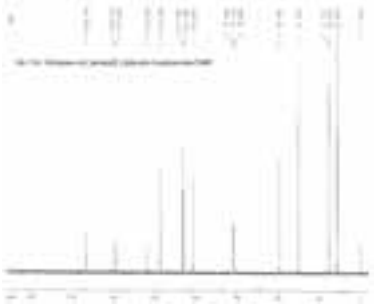
1765 3-(Methylthio)methylthiophene (MS)



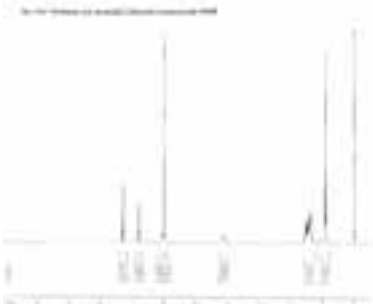
1766 5-Acetyl-2,3-dihydro-1,4-thiazine (1H-NMR)



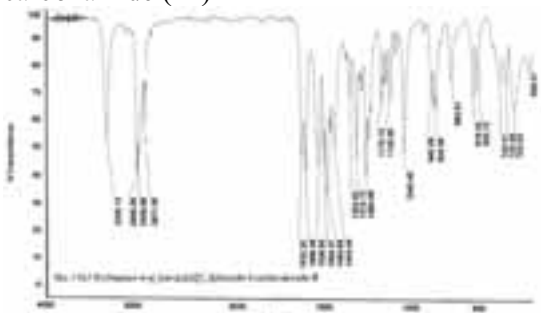
1767 N-Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide (13C-NMR)



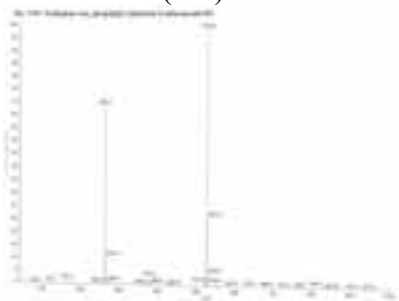
1767 N-Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide (1H-NMR)



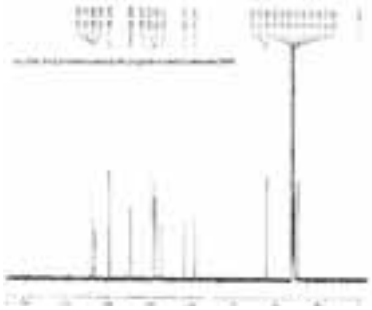
1767 N-Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide (IR)



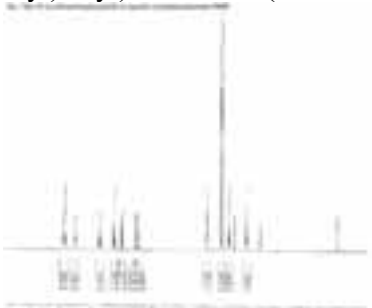
1767 N-Heptan-4-yl)benzo[d][1,3]dioxole-5-carboxamide (MS)



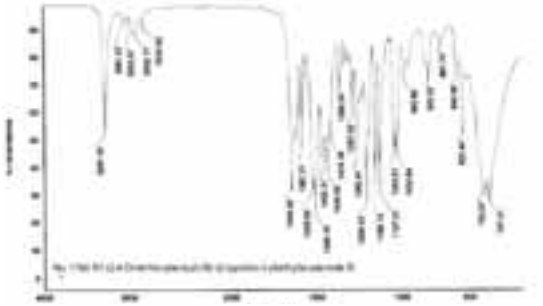
1768 N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (13C-NMR)



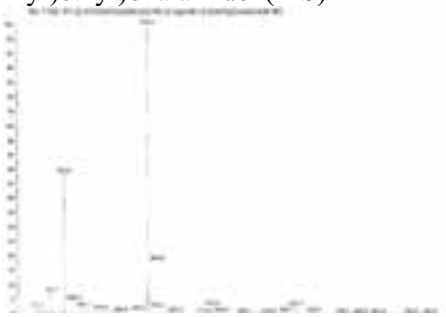
1768 N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (1H-NMR)



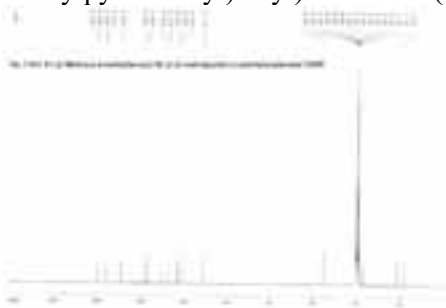
1768 N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (IR)



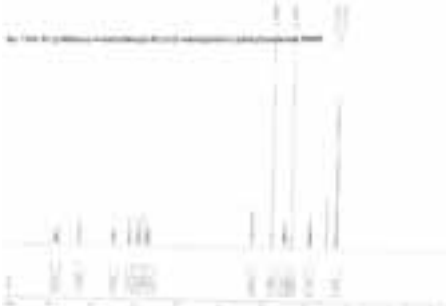
1768 N1-(2,4-Dimethoxybenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (MS)



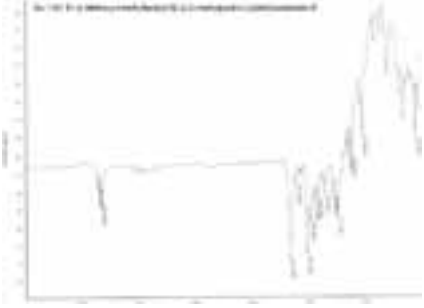
1769 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(5-methylpyridin-2-yl)ethyl)oxalamide (13C-NMR)



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

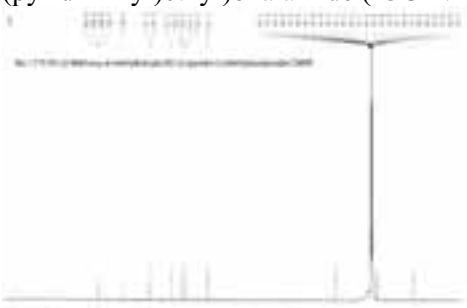


1769 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(5-methylpyridin-2-yl)ethyl)oxalamide (IR)

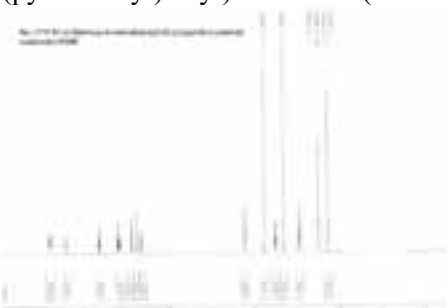


1769 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(5-methylpyridin-2-yl)ethyl)oxalamide (MS)

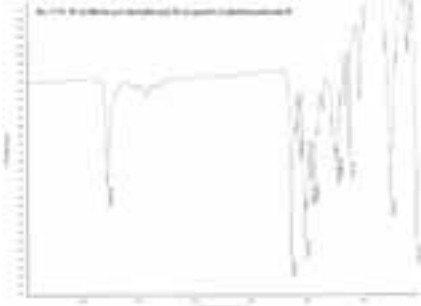
1770 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (13C-NMR)



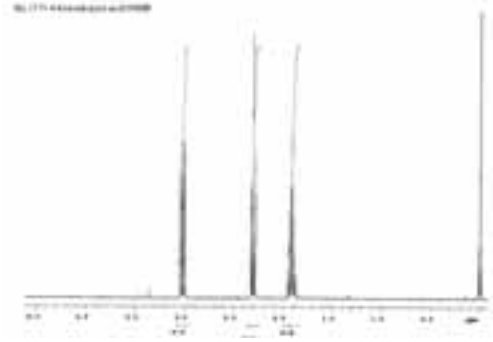
1770 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (1H-NMR)



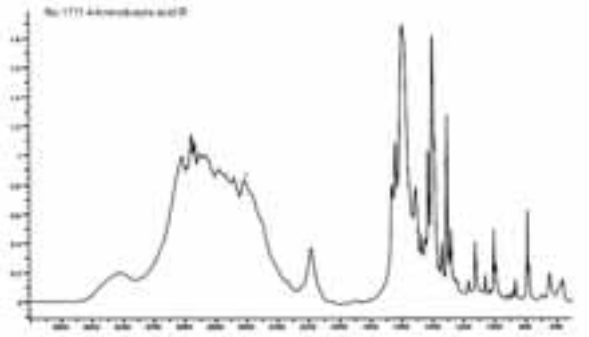
1770 N1-(2-Methoxy-4-methylbenzyl)-N2-(2-(pyridin-2-yl)ethyl)oxalamide (IR)



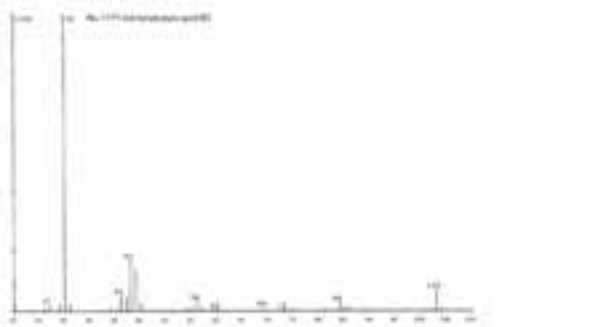
1771 4-Aminobutyric acid (1H-NMR)



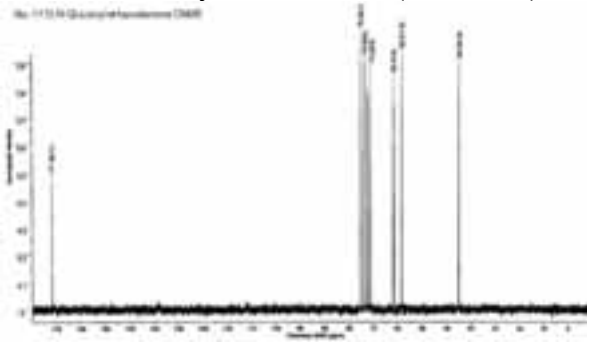
1771 4-Aminobutyric acid (IR)



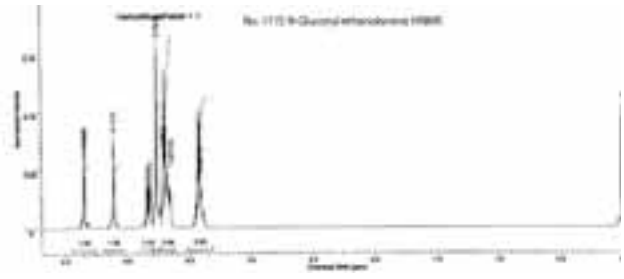
1771 4-Aminobutyric acid (MS)



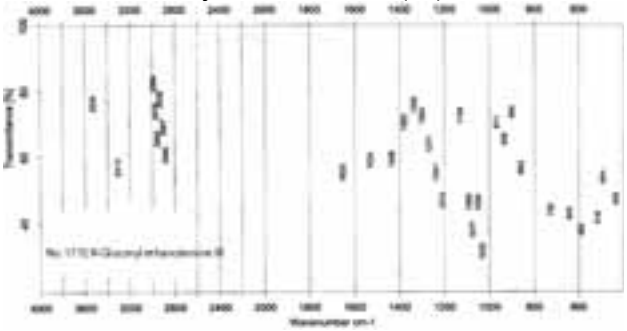
1772 N-Gluconyl ethanolamine (13C-NMR)



1772 N-Gluconyl ethanolamine (1H-NMR)

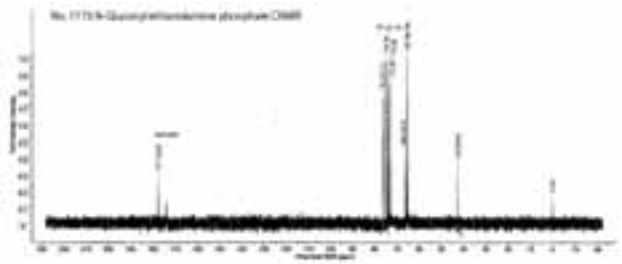


1772 N-Gluconyl ethanolamine (IR)

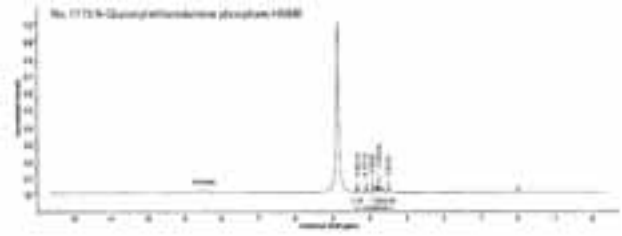


1772 N-Gluconyl ethanolamine (MS)

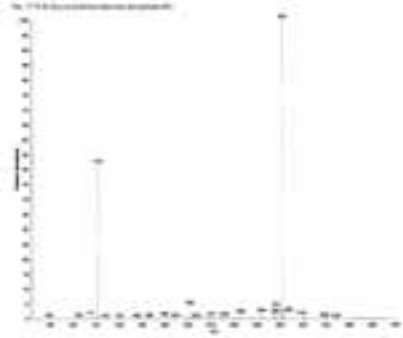
1773 N-Gluconyl ethanolamine phosphate (13C-NMR)



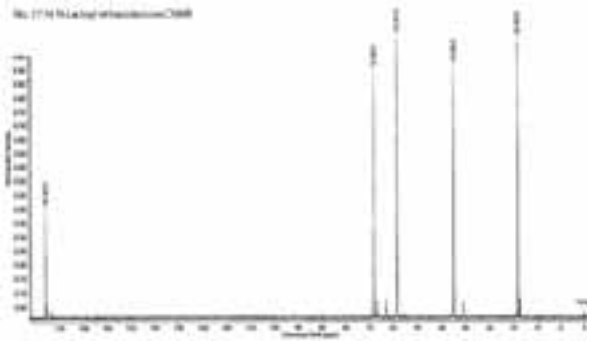
1773 N-Gluconyl ethanolamine phosphate (1H-NMR)



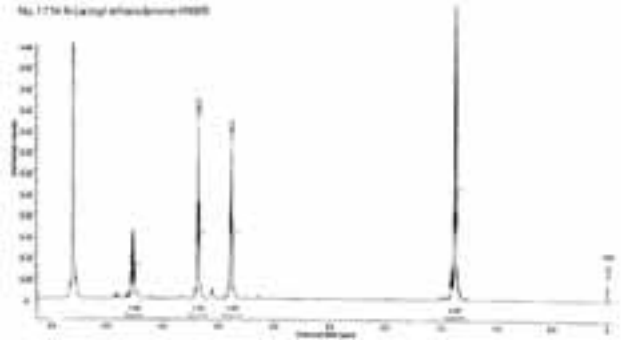
1773 N-Gluconyl ethanolamine phosphate (MS)



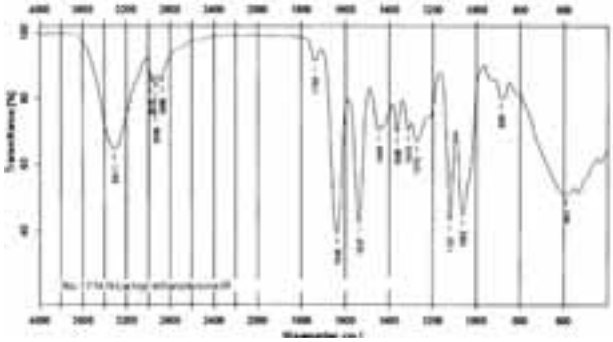
1774 N-Lactoyl ethanolamine (13C-NMR)



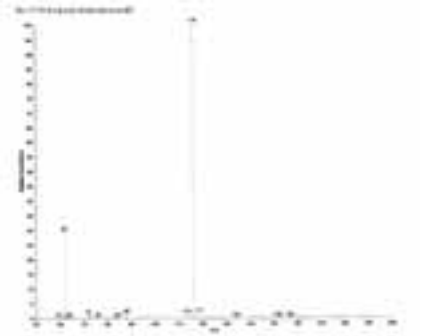
1774 N-Lactoyl ethanolamine (1H-NMR)



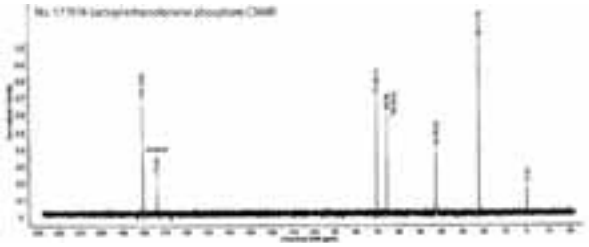
1774 N-Lactoyl ethanolamine (IR)



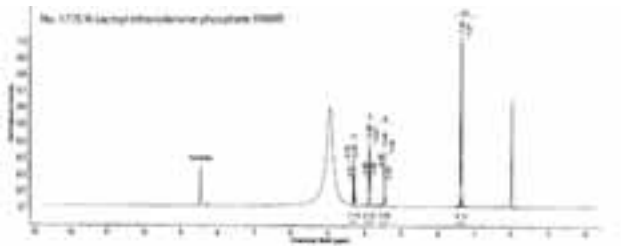
1774 N-Lactoyl ethanolamine (MS)



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



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



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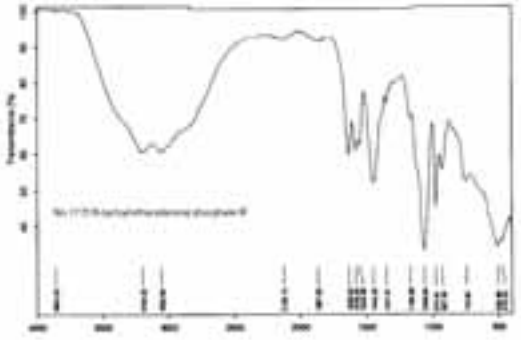
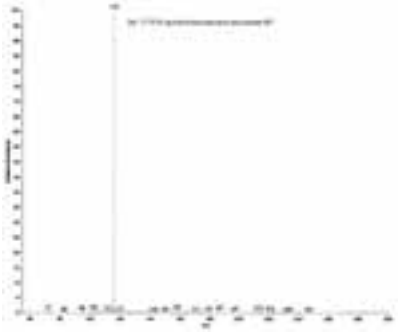
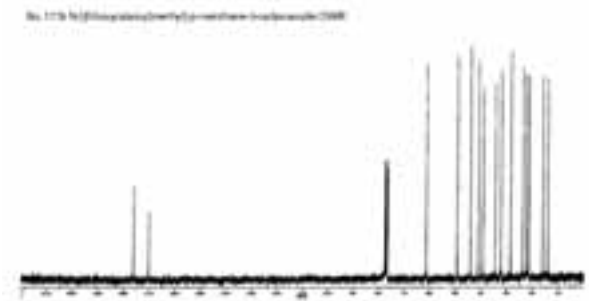


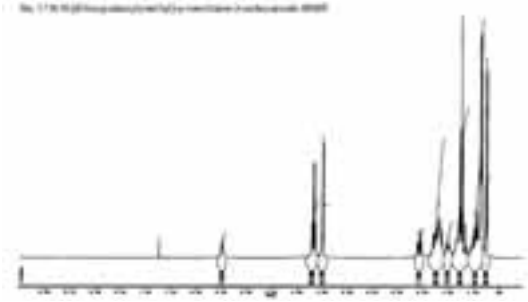
1775 N-Lactoyl ethanolamine phosphate (MS)



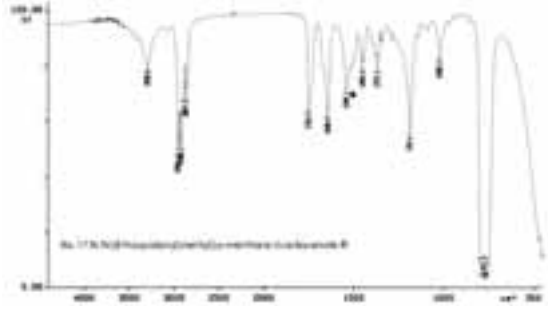
1776 N-[(Ethoxycarbonyl)methyl)-p-menthane-3-carboxamide (13C-NMR)



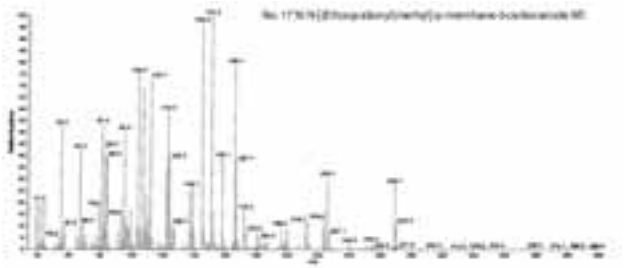
1776 N-[(Ethoxycarbonyl)methyl)-p-menthane-3-carboxamide (1H-NMR)



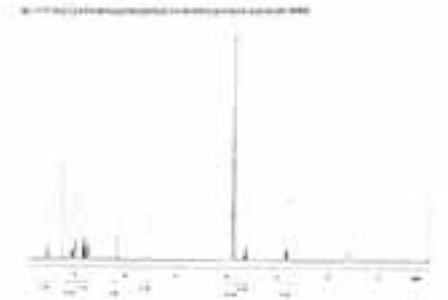
1776 N-[(Ethoxycarbonyl)methyl)-p-menthane-3-carboxamide (IR)



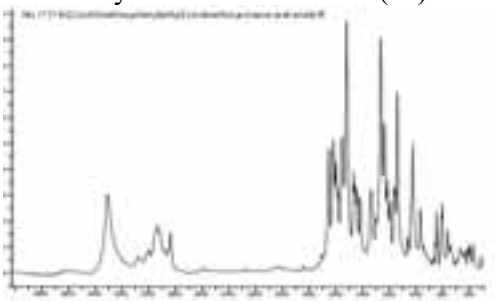
1776 N-[(Ethoxycarbonyl)methyl)-p-menthane-3-carboxamide (MS)



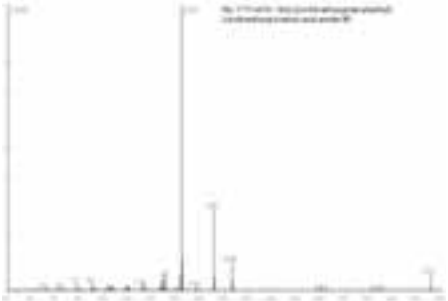
1777 N-[2-(3,4-Dimethoxyphenyl)ethyl]-3,4-dimethoxycinnamic acid amide (1H-NMR)



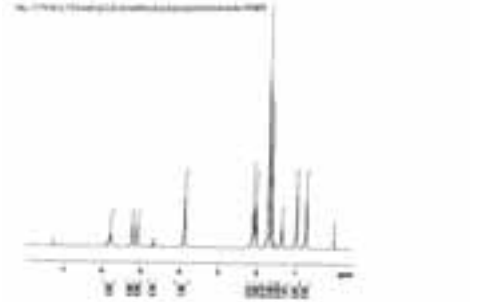
1777 N-[2-(3,4-Dimethoxyphenyl)ethyl]-3,4-dimethoxycinnamic acid amide (IR)



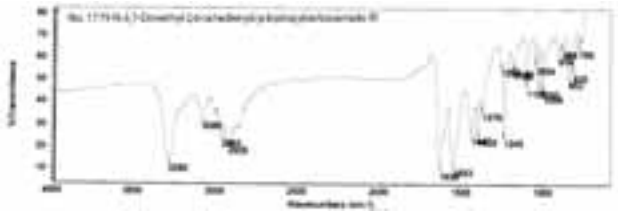
1777 N-[2-(3,4-Dimethoxyphenyl)ethyl]-3,4-dimethoxycinnamic acid amide (MS)



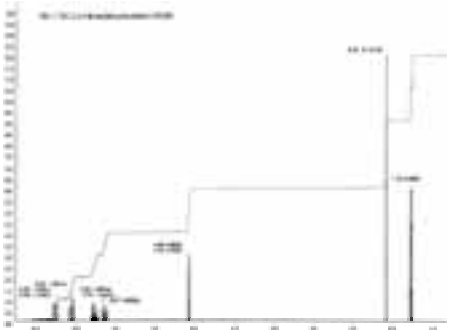
1779 N-3,7-Dimethyl-2,6-octadienyl cyclopropylcarboxamide (1H-NMR)



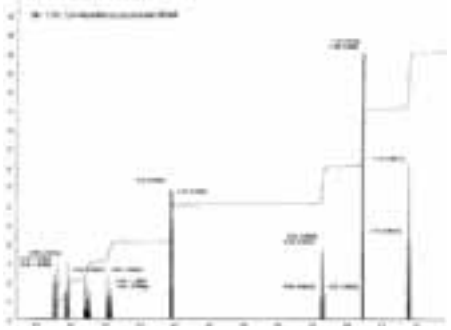
1779 N-3,7-Dimethyl-2,6-octadienyl cyclopropylcarboxamide (IR)



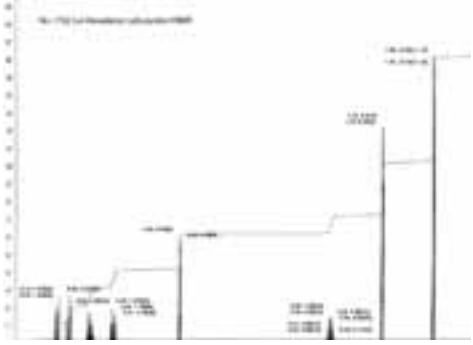
1780 2,4-Hexadienyl acetate (1H-NMR)



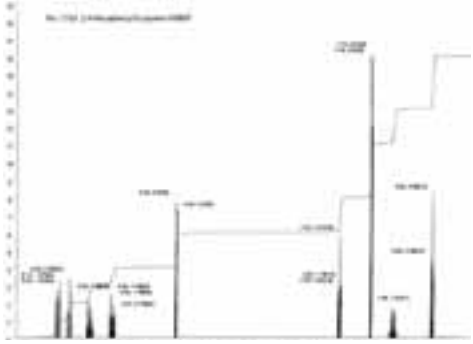
1781 2,4-Hexadienyl propionate (1H-NMR)



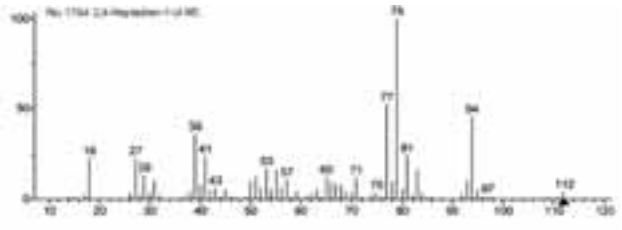
1782 2,4-Hexadienyl isobutyrate (1H-NMR)



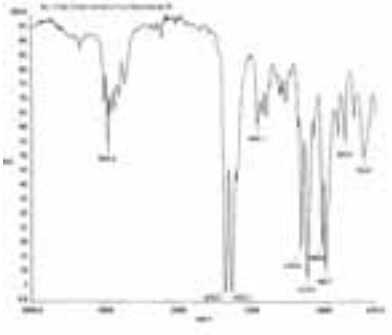
1783 2,4-Hexadienyl butyrate (1H-NMR)



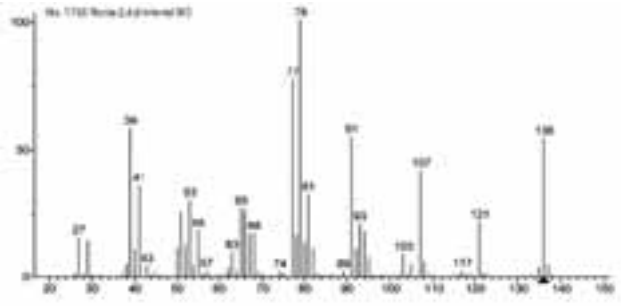
1784 2,4-Heptadien-1-ol (MS)



1786 2,4,7-Decatrienal (IR)



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



Index: Specifications of certain flavouring agents

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)		The available toxicological data were sufficient to assess the safety of ASC by setting ADIs for chlorite and chlorate. Chlorite: ADI of 0.03 mg/kg bw per day Chlorate: ADI of 0.01 mg/kg bw per day. New specifications were prepared for sodium chlorite and one of the acids used in the preparation of ASC, sodium hydrogen sulfate.
Asparaginase from *Aspergillus oryzae* expressed in *Aspergillus oryzae*	N	ADI "not specified"[b] when used in the applications specified and in accordance with good manufacturing practice.
Carrageenan and Processed Eucheuma Seaweed	R R	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. 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.
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 *Pseudomonas amyloderamosa*	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 *Fusarium venetatum* produced by *Aspergillus oryzae*	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 assignation 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 *Tagetes erecta*	W

Flavouring agents	JECFA No.	Specifications[a]
3-Acetyl-2,5,-dimethylfuran	1506	R
Ethyl maltol	1481	R
Maltol	1480	R
Maltyl isobutyrate	1482	R
3-Methyl-2-oxobutanoic acid	631	R
3-Methyl-2-oxopentaoic acid	632	R
4-Methyl-2-oxopentanoic acid	633	R
Sodium 3-Methyl-2-oxobutanoate	631.1	R
Sodium 3-Methyl-2-oxopentaoate	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

[a]R: 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
Aflatoxins (Intake assessment from pistachios, hazelnuts, almonds, Brazil nuts and dried figs, impact of various Maximum Levels, MLs)	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. 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 AFT in all five of the highest exposed population groups compared to setting an ML of 20 µg/kg. 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. 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.
Ochratoxin A (OTA)	The previous PTWI of 100 ng/kg bw was retained. 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. 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. 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.

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
trans-3-Hexenol	1621	N	No safety concern
trans-4-Hexenal	1622	N	No safety concern
5-Hexenol	1623	N	No safety concern
Methyl (*Z*)-3-hexenoate	1624	N	No safety concern
cis-4-Octenol	1625	N	No safety concern
Ethyl (Z)-3-hexenoate	1626	N	No safety concern
3-Octenoic acid	1627	N	No safety concern
(Z)-3-Octenyl propionate	1628	N	No safety concern
trans-4-Octenoic acid	1629	N	No safety concern
Methyl (Z)-5-octenoate	1630	N	No safety concern
cis-5-Octenoic acid	1631	N	No safety concern
Ethyl 3-octenoate	1632	N	No safety concern
cis-4-Decenol	1633	N	No safety concern
Isobutyl 10-undecenoate	1634	N	No safety concern
11-Dodecenoic acid	1635	N	No safety concern
(Z)-4-Dodecenal	1636	N	No safety concern
cis-9-Octadecenol	1637	N	No safety concern
cis-9-Octadecenyl acetate	1638	N	No safety concern
Methyl 10-undecenoate	1639	N	No safety concern
(Z)-8-Tetradecenal	1640	N	No safety concern
9-Octadecenal	1641	N	No safety concern
(E)-4-Nonenal	1642	N	No safety concern

[a]N: 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
(E)- and (Z)-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
p-alpha,alpha-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
alpha,alpha-Dimethylphenethyl alcohol	1653	N	No safety concern
alpha,alpha-Dimethylphenethyl formate	1654	N	No safety concern
alpha,alpha-Dimethylphenethyl acetate	1655	N	No safety concern
alpha,alpha-Dimethylphenethyl butyrate	1656	N	No safety concern
alpha,alpha-Dimethylbenzyl isobutyrate	1657	N	No safety concern
Structural Class II			
6-Acetoxydihydrotheaspirane	1647	N	No safety concern
6-Hydroxydihydrotheaspirane	1648	N	No safety concern

[a]N: 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-*cis*-*p*-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			
cis- and *trans*-Mercapto-*p*-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
bis(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

[a]N: 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
cis- and *trans*-Ethyl 2,4-dimethyl-1,3-dioxolane-2-acetate	1715	N	No safety concern

[a]N: 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-*cis*-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

[a]N: 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
cis- and *trans*-5-Ethyl-4-methyl-2-(2-methylpropyl)thiazoline	1761	N	No safety concern
cis- and *trans*-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

[a]N: 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

[a]N: 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

[a]N: 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 Soduim 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.

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66th meeting 2006 (E)

3 Compendium of food additive specifications - Joint FAO/WHO Expert Committee on Food Additives
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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.

ISBN 978-92-5-105866-4 ISSN 1817-7077

TC/M/A1447E/1/11.07/1500