MALTOL

Prepared at the 68th JECFA (2007) and published in FAO JECFA Monographs 4 (2007), superseding tentative specifications prepared at the 65th JECFA (2005) and published in the Combined Compendium of Food Additive Specifications, FAO JECFA Monographs 1 (2005). An ADI of 0-1 mg/kg bw was established at the 25th JECFA (1981).

SYNONYMS   INS No. 636

DEFINITION   Maltol is obtained by chemical synthesis

Chemical names   3-Hydroxy-2-methyl-4-pyrone
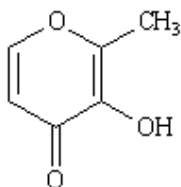
C.A.S. number   118-71-8

Chemical formula $C_6H_6O_3$

Structural formula

Formula weight   126.11

Assay   Not less than 99.0%, calculated on the anhydrous basis

DESCRIPTION   White crystalline powder having a characteristic caramel-butterscotch odour

FUNCTIONAL USES   Flavour enhancer, flavouring agent (see 'Flavouring agents' monograph No. 1480)

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)   Sparingly soluble in water, soluble in ethanol and in propylene glycol

Melting range (Vol. 4)   160 - 164°

Ultraviolet absorption (Vol. 4)   The ultraviolet spectrum of a 10 mg/l solution of the sample in 0.1 N hydrochloric acid shows an absorption maximum at about 274 nm

PURITY

Water (Vol. 4)   Not more than 0.5% (Karl Fischer)

Sulfated ash (Vol. 4)   Not more than 0.2% (use 5 g sample)

Lead (Vol. 4)   Not more than 1 mg/kg

Determine using an AAS/ICP-AES technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the methods described in Volume 4 under "General Methods, Metallic Impurities".

METHOD OF ASSAY

Standard solution

Transfer about 50 mg of Maltol Reference Standard (available from the United States Pharmacopoeia, 12601 Twinbrook Parkway, Rockville, MD 20852, USA), or equivalent, accurately weighed, into a 250-ml volumetric flask, dilute to volume with 0.1 N hydrochloric acid, and mix. Pipet 5 ml of this solution into a 100-ml volumetric flask, dilute to volume with 0.1 N hydrochloric acid, and mix.

Assay solution

Transfer about 50 mg of the sample, accurately weighed, into a 250-ml volumetric flask, dilute to volume with 0.1 N hydrochloric acid, and mix. Pipet 5 ml of this solution into a 100-ml volumetric flask, dilute to volume with 0.1 N hydrochloric acid, and mix.

Procedure

Determine the absorbance of each solution in a 1-cm quartz cell at the absorption maximum (about 274 nm) using 0.1 N hydrochloric acid as the blank.

Calculate the percent of Maltol in the sample by the formula:

% of Maltol = $100 \times W_S \times A_A / (A_S \times W_A)$

where

A_A is the absorbance of the sample solution
A_S is the absorbance of the standard solution
W_A is the weight in mg of sample in the sample solution
W_S is the weight in mg of the reference standard in the standard solution