Institute of Medicine  
Food and Nutrition Board  
Committee on Food Chemicals Codex

Revised Monograph - Niacin

Please send comments to the Committee on Food Chemicals Codex, National Academy of Sciences, FO 3042, 2101 Constitution Avenue, N.W., Washington, DC 20418 or email them to fcc@nas.edu. All comments must be received by December 15, 1996, for consideration for the First Supplement.

June 27, 1996

Niacin

Nicotinic Acid; 3-Pyridinecarboxylic Acid

\[
\text{C}_6\text{H}_5\text{NO}_2 \quad \text{Formula wt 123.11} \]

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\text{CAS: [59-67-6]} 
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DESCRIPTION

White or light yellow crystals or a crystalline powder. It is odorless or has a slight odor. One g dissolves in 60 mL of water. It is freely soluble in boiling water and in boiling alcohol and also in solutions of alkali hydroxides and carbonates. It is almost insoluble in ether.

Functional Use in Foods  Nutrient; dietary supplement.

REQUIREMENTS

Identification

A. Triturate a sample with twice its weight of 2,4-dinitrochlorobenzene. Gently heat about 10 mg of the mixture in a test tube until melted, and continue the heating for a few seconds longer. Cool, and add 3 mL of 0.5 N alcoholic potassium hydroxide. A deep red to deep wine-red color is produced.

B. Dissolve about 50 mg in 20 mL of water, neutralize to litmus paper with 0.1 N sodium hydroxide, and add 3 mL of cupric sulfate TS. A blue precipitate gradually forms.

C. The infrared absorption spectrum of a mineral oil dispersion of the sample, previously dried at 105° for 1 h, exhibits maxima only at the same wavelengths as that of a similar preparation of USP Niacin Reference Standard.

D. Determine the absorbance of a solution of the sample containing 20 µg in each mL of water in a 1-cm cell at 237 nm and 262 nm, using water as the blank. The ratio \(A_{237}/A_{262}\) is between 0.35 and 0.39.

Assay  Not less than 99.5% and not more than 101.0% of \(\text{C}_6\text{H}_5\text{NO}_2\), calculated on the dried basis.

Heavy Metals (as Pb)  Not more than 0.002%.

Loss on Drying  Not more than 1.0%.

Melting Range  Between 234° and 238°.
Residue on Ignition  Not more than 0.1%.

TESTS

Assay  Dissolve about 300 mg, accurately weighed, in about 50 mL of water, add phenolphthalein TS, and titrate with 0.1 N sodium hydroxide. Perform a blank determination (see General Provisions). Each mL of 0.1 N sodium hydroxide is equivalent to 12.31 mg of $C_6H_5NO_2$.

Heavy Metals  Mix 1 g with 2 mL of 1 N acetic acid, add water to make 25 mL, heat gently until solution is complete, and cool. This solution meets the requirements of the Heavy Metals Test, Appendix IIIB, using 20 µg of lead ion (Pb) in the control (Solution A).

Loss on Drying, Appendix IIC  Dry at 105° for 1 h.

Melting Range  Determine as directed for Melting Range or Temperature, Appendix IIB.

Residue on Ignition, Appendix IIC  Ignite 1 g as directed in the general method.

Packaging and Storage  Store in well-closed containers.