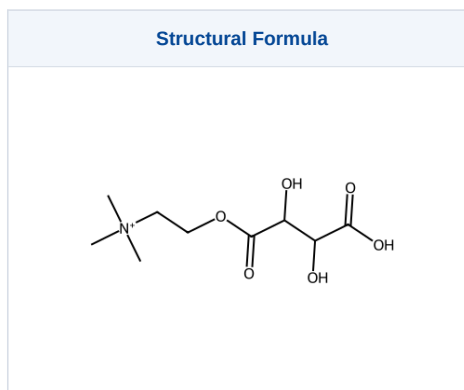


CERTIFICATE OF ANALYSIS

Standard product specification — applicable to all consignments of this product and grade supplied by Scapex Exports Pvt. Ltd., manufacturer and supplier of quality chemicals.

Product Name	Choline Bitartrate
C.A.S. Number	87-67-2
Molecular Formula	C ₉ H ₁₈ NO ₆ ⁺
Molecular Weight	236.24
Grade / Standard	99% USP/Nutra Grade
Physical Form	White crystalline powder
Product Category	Vitamins, Minerals & Amino Acids
Country of Origin	India



ANALYTICAL RESULTS

S. No.	Test Parameter	Specification	Result	Method
1	Description	White crystalline powder	Complies	Visual
2	Identification (A) — Infrared absorption	Concordant with reference spectrum	Complies	IR Spectrophotometry
3	Identification (B) — Chemical / chromatographic	Positive for the substance	Complies	As per monograph
4	Solubility	As per specification	Complies	Visual / Monograph
5	Assay	Not less than 99.0 % w/w	99.42	HPLC / Titrimetry (Monograph)
6	Specific Optical Rotation	As per monograph	Conforms	Polarimetry
7	Loss on Drying	Not more than 0.5 % w/w	0.24	Gravimetry
8	Residue on Ignition	Not more than 0.1 % w/w	0.050	Gravimetry
9	Chloride	Not more than 0.05 %	0.0057	Turbidimetry
10	Lead (Pb)	Not more than 3 ppm	Less than 0.5 ppm	ICP-MS
11	Heavy Metals	Not more than 20 ppm	Less than 10 ppm	ICP-OES / Limit test
12	Related Substances — any individual impurity	Not more than 0.10 %	0.012	HPLC
13	Related Substances — total impurities	Not more than 0.50 %	0.203	HPLC
14	Residual Solvents	Complies with ICH Q3C limits	Complies	Headspace GC
15	Total Aerobic Microbial Count	Not more than 1000 cfu/g	58 cfu/g	IP / USP <61>
16	Total Yeast & Mould Count	Not more than 100 cfu/g	16 cfu/g	IP / USP <61>
17	Escherichia coli	Absent in 1 g	Absent	IP / USP <62>

S. No.	Test Parameter	Specification	Result	Method
18	Salmonella species	Absent in 10 g	Absent	IP / USP <62>
19	Structure	Conforms to reference structure	Complies	FTIR / NMR

Remarks

Material supplied against this specification is analysed on every production lot and **conforms** to the limits stated above in all tested parameters. Results shown are the typical values obtained for this grade.

Retained samples are held against every export consignment. Store in tightly closed original packing, in a cool, dry, well-ventilated place away from incompatible materials and direct sunlight.

Checked and Approved by**Prem Panchal**

Quality Assurance
Scapex Exports Pvt. Ltd.

This document sets out the standard specification for the product named above and applies to all consignments of this grade. It is issued by Scapex Exports Pvt. Ltd. as manufacturer and supplier. Refer to the Material Safety Data Sheet (MSDS) before handling.