NutraNorth

CERTIFICATE OF ANALYSIS

Manufactured for	**MACKISEN**				
Name of product:	**Choline Bitartrate**				
Packaging Lot # :	**M2500519/1**	**Master Packaging Record #**		**Expiry Date :**	**08/2028**
		MPR	**MA-N600-60-V0**		
Manufacturing Lot # :	**M2500519**	**Master Manufacturing Record #:**		**MFG Date:**	**09/2025**
		MMR	**MA-N600-V0**		
Storage Conditions:	Store at room temperature (R.T), in closed dry containers and Keep away from high temperature & moisture.				
Physical Description:	White powder in clear Veggie "00" capsules.		60 count in Bottle-150 cc-38/400 White HDPE Round with Cap-38-400 white HIS P/P,top dot, plain liner.		

Physical Tests:

TESTES	Results	Specifications Low	Target	High	Strength	Method
Average Wt. of Capsules	856 mg	612	680	748	mg	USP <2091>
Wt. variation of Capsules	Conforms	Conforms as per USP weight variation +/- 10 %				USP <2091>
Odour & Taste	Conforms	Characteristic, Conforms to Standard				Visual, Olfactory
Disintegration	14 mins	NMT 30			min	USP <2040>
IDENTITY	Conforms	Conforms to standard				FTIR

By Qualitative Analysis	Results		Low	Target	High	Strength	Method
Choline (Choline bitartrate)	302.65	mg	240.00	300.00	360.00	mg	JPL-021.00 (Titration)
NON-MEDICINAL INGREDIENTS	Rice Powder, Empty Clear Vegetable Capsule						

Purity:

MICRO:	Results	Limits	Method
Total Plate Count	<10 CFU/g	< 3,000 c.f.u / g	USP <2021/2022>
Total Yeast	<10 CFU/g	< 300 c.f.u / g	USP <2021/2022>
Total Mold	<10 CFU/g	< 300 c.f.u / g	USP <2021/2022>
E.Coli	Not Detected	Not Detected	USP <2021/2022>
Salmonella Spp	Not Detected	Not Detected	USP <2021/2022>
Staphylococcus Aureus	Not Detected	Not Detected	USP <2021/2022>
HEAVY METALS:	**Results**	**Limits - 2 capsules / day**	**Method**
Arsenic	<0.0002 mcg / kg b.w./day	< 0.14 mcg / kg b.w./day	ICP-MS
Cadmium	<0.0001 mcg / kg b.w./day	< 0.09 mcg / kg b.w./day	ICP-MS
Lead	0.0011 mcg / kg b.w./day	< 0.14 mcg / kg b.w./day	ICP-MS
Total Mercury	<0.0001 mcg / kg b.w./day	< 0.29 mcg / kg b.w./day	ICP-MS

Prepared by: Srinivas Dec/30/2025

Approved by: Bhargava Dec/30/2025

Quality Assurance

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NutraNorth

CERTIFICATE OF ANALYSIS

Manufactured for	**MACKISEN**				
Name of product:	**Choline Bitartrate**				
Packaging Lot # :	**M2500519/2**	**Master Packaging Record #**		**Expiry Date :**	**08/2028**
		MPR	**MA-N600-120-V0**		
Manufacturing Lot # :	**M2500519**	**Master Manufacturing Record #:**		**MFG Date:**	**09/2025**
		MMR	**MA-N600-V0**		
Storage Conditions:	Store at room temperature (R.T), in closed dry containers and Keep away from high temperature & moisture.				
Physical Description:	White powder in clear Veggie "00" capsules.		120 count in Bottle-250 cc-45/400 White HDPE Round with Cap-45-400 white HIS P/P,ribbed,plain liner.		

Physical Tests:

TESTES	Results	Specifications Low	Target	High	Strength	Method
Average Wt. of Capsules	856 mg	612	680	748	mg	USP <2091>
Wt. variation of Capsules	Conforms	Conforms as per USP weight variation +/- 10 %				USP <2091>
Odour & Taste	Conforms	Characteristic, Conforms to Standard				Visual, Olfactory
Disintegration	14 mins	NMT 30			min	USP <2040>
IDENTITY	Conforms	Conforms to standard				FTIR

By Qualitative Analysis	**Results**		**Low**	**Target**	**High**	**Strength**	**Method**
Choline (Choline bitartrate)	302.65	mg	240.00	300.00	360.00	mg	JPL-021.00 (Titration)
NON-MEDICINAL INGREDIENTS	Rice Powder, Empty Clear Vegetable Capsule						

Purity:

MICRO:	**Results**	**Limits**	**Method**
Total Plate Count	<10 CFU/g	< 3,000 c.f.u / g	USP <2021/2022>
Total Yeast	<10 CFU/g	< 300 c.f.u / g	USP <2021/2022>
Total Mold	<10 CFU/g	< 300 c.f.u / g	USP <2021/2022>
E.Coli	Not Detected	Not Detected	USP <2021/2022>
Salmonella Spp	Not Detected	Not Detected	USP <2021/2022>
Staphylococcus Aureus	Not Detected	Not Detected	USP <2021/2022>
HEAVY METALS:	**Results**	**Limits - 2 capsules / day**	**Method**
Arsenic	<0.0002 mcg / kg b.w./day	< 0.14 mcg / kg b.w./day	ICP-MS
Cadmium	<0.0001 mcg / kg b.w./day	< 0.09 mcg / kg b.w./day	ICP-MS
Lead	0.0011 mcg / kg b.w./day	< 0.14 mcg / kg b.w./day	ICP-MS
Total Mercury	<0.0001 mcg / kg b.w./day	< 0.29 mcg / kg b.w./day	ICP-MS

Prepared by: Shinithaj Dec/30/2025

Approved by: Bhargavi Dec/30/2025

Quality Assurance

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