



# JINAN JIUAN ESTER CHEMICAL CO.,LTD.

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## CERTIFICATE OF ANALYSIS

Product Name :	L+-Choline Bitartrate	Country of Origin:	China
Batch No.:	20170204	Quantity:	800Kg
Manufacture time:	2017.02.24	Package:	25Kg/Drum
Expiry Date:	2019.02.23	Standard:	USP

Item	Specification	Results	Test Method
Appearance	White crystalline powder	Conform	Visual
Assay (d.s.)	99.0-100.5%	99.74%	USP<541>
Loss on Drying	NMT 0.5%	0.14%	USP<731>
pH(10% solution):	3.0-4.0	3.70	USP<791>
Specific Rotation	+17.5° ~ +18.5°	Conform	USP<781S>
Residue on Ignition	NMT 0.1%	0.02%	USP<281>
Heavy Metals	NMT 10 ppm	Conform	USP<231>
Arsenic	NMT 2 ppm	Conform	USP<730>
Lead	NMT 0.3 ppm	Conform	USP<730>
Cadmium	NMT0.2 ppm	Conform	USP<730>
Mercury	NMT 0.1 ppm	Conform	USP<730>
1,4 Dioxane	NMT 10 ppm	Conform	USP
Total Amines	NMT 10 ppm	Conform	USP
Chromatographic Purity	Conform	Conform	USP
Total Plate Count	NMT 1000cfu/g	Conform	USP<61>
Yeast and Mold	NMT 100cfu/g	Conform	USP<61>
E.coli	Negative	Conform	USP<62>
Salmonella	Negative	Conform	USP<62>
Staphylococcus	Negative	Conform	USP<62>
Particle Size	Thru20 mesh	100%	USP<786>
	Thru 40 mesh	68%	
	Thru 60 mesh	10%	

### Conclusion:

The test results correspond to USP.

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