

PHARMACOPEIAL DISCUSSION GROUP

REVISION 2, CORRECTION 2

E-24: LACTOSE, MONOHYDRATE

Correction to Rev. 2 signed on June 5, 2008

Items to be corrected:

- TLC Identification: harmonized attribute test deleted; retained as an EP local requirement.
- Heavy metals: JP local requirement test deleted.

	Harmonized attributes		
	EP	JP	USP
Definition	+	+	+
Clarity and color of solution	+(1)	+	+
Identification IR	+	+	+
Specific optical rotation	+	+	+
Acidity or alkalinity	+	+	+
Water	+	+	+
Residue on ignition	+	+	+
Loss on drying	-	+	+
Protein and light-absorbing impurities	+	+	+
Microbial limits (TAMC, <i>E. coli</i>)	+	+	+
Microbial limits (TYMC)	-	+	+

(1) In EP, reference suspension I is used to evaluate the opalescence of the solution in the test for clarity and colour of solution. Each pharmacopeia has similar but minor difference in the acceptance criteria.

Legend + will adopt and implement; – will not stipulate

Non-harmonized attributes

Characters/Description, Packaging and storage, Labeling

Local requirements

EP	JP	USP
Identification (water), Second identification (TLC, colour reaction, water); Functionality-related characteristics (Particle-size distribution, Bulk and tapped density)	The definition section also covers granulated lactose, It also states: "It is a disaccharide obtained from milk, consist of one unit of glucose and one unit of galactose." The test for water is restricted to granulated forms (4.0-5.5%); Microbial limits: <i>Salmonella</i>	The definition section includes the following: "NOTE—Lactose Monohydrate may be modified as to its physical characteristics. It may contain varying proportions of amorphous lactose."; Identification (TLC)

Reagents and reference materials

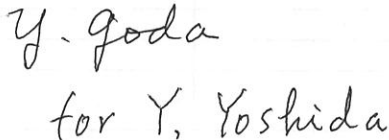
Each pharmacopeia will adapt the text to take account of local reference materials and reagent specifications.

Each pharmacopeia will consider actual titrant concentration in equations according to their local rules of calculation for titration.


European Pharmacopoeia

Signature	Name	Date
 82DD39EBFD74446...	Petra Doerr	20.12.2022

Japanese Pharmacopoeia

Signature	Name	Date
	Yukihiro Goda	20 Jan, 2023

United States Pharmacopeia

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 A7467E52FCC94E9...	Kevin Moore	12/15/2022

E-24 LACTOSE MONOHYDRATE

Correction 2 to Rev. 2

Definition

Lactose Monohydrate is the monohydrate of O- β -D-galactopyranosyl-(1 \rightarrow 4)- α -D-glucopyranose.

Clarity and color of solution- A solution of 1 g in 10 mL of boiling water is clear and nearly colorless. Determine the absorbance of this solution at a wavelength of 400 nm. The absorbance divided by the path length in centimeters is not more than 0.04.

Identification-

Infrared Absorption.

Record the infrared absorption spectrum of lactose monohydrate and compare with the Reference Spectrum or the spectrum obtained with the Reference Standard: the transmission minima correspond in position and relative size.

Specific optical rotation-

Dissolve 10 g by heating in 80 mL of water to 50 degrees. Allow to cool, and add 0.2 mL of 6 N ammonium hydroxide. Allow to stand for 30 minutes, and dilute with water to 100 mL: the specific rotation, calculated on the anhydrous basis, determined at 20 degrees, is between +54.4 degrees and +55.9 degrees.

Acidity or alkalinity-

Dissolve 6 g by heating in 25 mL of carbon dioxide-free water, cool, and add 0.3 mL of a solution of phenolphthalein (1 g in 100 mL of alcohol): the solution is colorless, and not more than 0.4 mL of 0.1 N sodium hydroxide is required to produce a change to a pink or red color.

Water, Karl Fischer - between 4.5% and 5.5%, determined on a preparation containing lactose monohydrate in a mixture of methanol and formamide (2:1).

Residue on ignition- not more than 0.1%. Ignition temperature is $600 \pm 50^\circ$.

Protein and light-absorbing impurities - Measure the light absorption of a 1% (w/v) solution in the range of 210 to 300 nm. The absorbance divided by the path length in centimeters is not more than 0.25 in the range of 210 to 220 nm and is not more than 0.07 in the range of 270 to 300 nm.

Loss on Drying – Dry a sample at 80° for 2 h. Not more than 0.5%.

Microbial contamination (internationally harmonized methods) -

The total aerobic microbial count is NMT 10² cfu/g and the total combined molds and yeasts count is NMT 50 cfu/g. It meets the requirements of the test for absence of *Escherichia coli*.