



Edition: BP 2025 (Ph. Eur. 11.6 update)

## Lacosamide Tablets



### [General Notices](#)

(Ph. Eur. monograph 2989)

### Action and use

Antiepileptic.

Ph Eur

## DEFINITION

Tablets containing [Lacosamide \(2992\)](#), for human use.

They comply with the monograph [Tablets \(0478\)](#) and the following additional requirements.

### Content

95.0 per cent to 105.0 per cent of the content of lacosamide ( $C_{13}H_{18}N_2O_3$ ) stated on the label.

## IDENTIFICATION

A. Record the UV spectrum of the principal peak in the chromatograms obtained with the solutions used in the assay, with a diode array detector in the range of 210–400 nm.

**Results** The UV spectrum of the principal peak in the chromatogram obtained with the test solution is similar to the UV spectrum of the principal peak in the chromatogram obtained with reference solution (a).

B. Examine the chromatograms obtained in the assay.

**Results** The principal peak in the chromatogram obtained with the test solution is similar in retention time and size to the principal peak in the chromatogram obtained with reference solution (a).

## TESTS

### Related substances

Liquid chromatography ([2.2.29](#)).

**Solvent mixture** [acetonitrile R](#), [water R](#) (13:87 V/V).

**Test solution** To 10 tablets add a suitable volume of the solvent mixture to obtain a concentration of lacosamide of 2–4 mg/mL. Shake vigorously for 30 min, sonicate for 10 min and allow to stand for 30 min. Dilute a suitable volume of the supernatant with the solvent mixture to obtain a concentration of lacosamide of 1.0 mg/mL.

**Reference solution (a)** Dissolve 20.0 mg of [lacosamide CRS](#) in the solvent mixture and dilute to 20.0 mL with the solvent mixture.

**Reference solution (b)** Dilute 1.0 mL of the test solution to 100.0 mL with the solvent mixture. Dilute 2.0 mL of this solution to 10.0 mL with the solvent mixture.

**Reference solution (c)** Dissolve 2 mg of [lacosamide impurity D CRS](#) and 3 mg of [lacosamide impurity F CRS](#) in the solvent mixture and dilute to 100 mL with the solvent mixture. Dilute 1 mL of the solution to 10 mL with the solvent mixture.

**Column:**

- **size:**  $l = 0.15$  m,  $\varnothing = 4.6$  mm;
- **stationary phase:** [end-capped extra-dense bonded octylsilyl silica gel for chromatography R](#) (5  $\mu$ m);
- **temperature:** 35 °C.

**Mobile phase** [methanesulfonic acid R](#), [acetonitrile R1](#), [water for chromatography R](#) (0.75:130:870 V/V/V).

**Flow rate** 2.0 mL/min.

**Detection** Spectrophotometer at 215 nm.

**Injection** 5  $\mu$ L of the test solution and reference solutions (b) and (c).

**Run time** 2.5 times the retention time of lacosamide.

**Identification of impurities** Use the chromatogram obtained with reference solution (c) to identify the peaks due to impurities D and F.

**Relative retention** With reference to lacosamide (retention time = about 6 min): impurity D = about 0.4; impurity F = about 0.5.

**System suitability** Reference solution (c):

- **resolution:** minimum 1.5 between the peaks due to impurities D and F.

**Calculation of percentage contents:**

- for each impurity, use the concentration of lacosamide in reference solution (b).

**Limits:**

- **unspecified impurities:** for each impurity, maximum 0.2 per cent;
- **total:** maximum 1.0 per cent;
- **reporting threshold:** 0.1 per cent.

**Dissolution<sup>1</sup>** ([2.9.3, Apparatus 2](#)).

**Dissolution medium** 10.3 g/L solution of [hydrochloric acid R](#). Use 900 mL of the medium.

**Rotation speed** 50 r/min.

**Time** 30 min.

**Analysis** Liquid chromatography ([2.2.29](#)).

**Test solutions** Samples withdrawn from the dissolution vessel and filtered.

**Reference solution** Using sonication, dissolve a suitable quantity of [lacosamide CRS](#) in a suitable volume of the dissolution medium to obtain a concentration of lacosamide corresponding to the theoretical concentration of lacosamide in the test solution, based on the labelled content of the tablets.

**Column:**

- **size:**  $l = 0.05$  m,  $\varnothing = 4.6$  mm;
- **stationary phase:** [end-capped octadecylsilyl silica gel for chromatography R](#) (3  $\mu$ m);
- **temperature:** 35 °C.

**Mobile phase** [trifluoroacetic acid R](#), [acetonitrile R1](#), [water for chromatography R](#) (1:300:700 V/V/V).

**Flow rate** 1.0 mL/min.

**Detection** Spectrophotometer at 215 nm.

**Injection** 2 µL.

**Run time** 2.5 min.

**System suitability** Reference solution:

— *repeatability*: maximum relative standard deviation of 1.5 per cent determined on 6 injections.

Calculate the amount of dissolved lacosamide ( $C_{13}H_{18}N_2O_3$ ), expressed as a percentage of the content stated on the label, taking into account the assigned content of [lacosamide CRS](#).

**Acceptance criterion**:

— Q = 80 per cent after 30 min.

## ASSAY

Liquid chromatography ([2.2.29](#)) as described in the test for related substances with the following modifications.

**Injection** Test solution and reference solution (a).

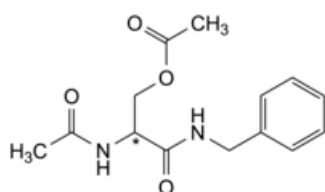
**System suitability** Reference solution (a):

— *repeatability*: maximum relative standard deviation of 1.5 per cent determined on 6 injections.

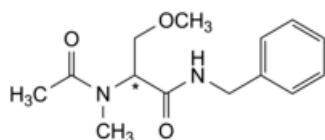
Calculate the percentage content of lacosamide ( $C_{13}H_{18}N_2O_3$ ) taking into account the assigned content of [lacosamide CRS](#).

## IMPURITIES

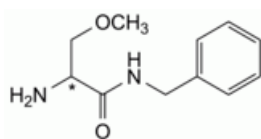
**Other detectable impurities** (the following substances would, if present at a sufficient level, be detected by one or other of the tests in the monograph): B, C, D, E, F, J, K.



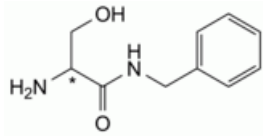
B. (2E)-2-acetamido-3-(benzylamino)-3-oxopropyl acetate,



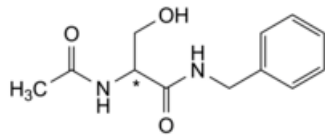
C. (2E)-N-benzyl-3-methoxy-2-(N-methylacetamido)propanamide,



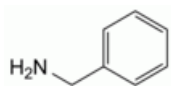
D. (2E)-2-amino-N-benzyl-3-methoxypropanamide,



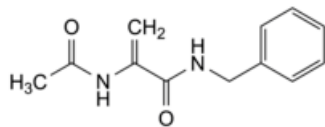
E. (2 $\bar{S}$ )-2-amino-*N*-benzyl-3-hydroxypropanamide,



F. (2 $\bar{S}$ )-2-acetamido-*N*-benzyl-3-hydroxypropanamide,



J. phenylmethanamine,



K. 2-acetamido-*N*-benzylprop-2-enamide.

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<sup>1</sup> The test approved in the marketing authorisation is to be used for routine quality control to confirm batch-to-batch consistency. For more information please consult Ph. Eur. 1. *General Notices*.