# Lidocaine and Prilocaine Cream

Lidocaine and Prilocaine Hydrochloride Cream

Lidocaine and Prilocaine Cream contains prilocaine hydrochloride equivalent to not less than 90.0 per cent and not more than 110.0 per cent of the stated amount of amount of prilocaine, $C_{13}H_{20}N_2O$ and lidocaine, $C_{14}H_{22}N_2O$.

**Usual Strength**. Lidocaine 2.5 per cent w/w and Prilocaine 2.5 per cent w/w.

## Identification

In the Assay, the principal peaks in the chromatogram obtained with the test solution correspond to the principal peaks in the chromatogram obtained with the reference solution.

## Tests

**pH** (2.4.24). 8.7 to 9.7, determined in a 10.0 per cent w/v solution in *water*.

**Related substances**. Determine by liquid chromatography (2.4.14).

*Note- Immediately store all the solutions at or below 10°.*

*Test solution.* Transfer a quantity of the cream containing 20 mg of Lidocaine in 100.0- ml volumetric flask, add 5 ml of 5*M sodium hydroxide* to disperse cream and mix. Add 5 ml of *5M hydrochloric acid* and dilute to volume with mobile phase A.

*Reference solution (a).* A 0.0002 per cent w/v solution, each of *lidocaine RS* and *prilocaine hydrochloride RS* in mobile phase A.

*Reference solution (b).* A solution containing 0.008 per cent w/v of *prilocaine related compound B RS* ((RS)-N-(4-methylphenyl)-2-(propylamino)propanamide) and 0.02 per cent w/v each of *lidocaine RS* and *prilocaine hydrochloride RS* in mobile phase A.

Chromatographic system

- a stainless steel column 10 cm x 4.6 mm, packed with octadecylsilane bonded to porous silica (3 µm),
- sample temperature: 10°,
- column temperature: 40º,
- mobile phase: A. a buffer solution prepared by dissolving 2.73 g of *monobasic potassium phosphate* in 630 ml of *water*, adjusted to pH 7.2 with *5M sodium hydroxide* and diluted to 1000 ml with *acetonitrile*,
  B. a buffer solution prepared by dissolving 2.73 g of *monobasic potassium phosphate* in 900 ml of *water*, adjusted to pH 7.2 with *5M sodium hydroxide* and diluted to 1000 ml with *acetonitrile*,
- a gradient programme using the conditions given below,
- flow rate: 1.5 ml per minute,
- spectrophotometer set at 232 nm,
- injection volume: 50 µl.

| Time (in min.) | Mobile phase A (per cent v/v) | Mobile phase B (per cent v/v) |
|---|---|---|
| 0 | 67 | 33 |
| 11 | 67 | 33 |
| 22 | 100 | 0 |
| 32 | 100 | 0 |
| 32.1 | 67 | 33 |
| 35 | 67 | 33 |

| Name | Relative retention time | Correction factor |
|---|---|---|
| o-Toluidine | 0.38 | $0.43^{(P)}$ |
| n-Chloroacetyl-2,6-xylidine | 0.54 | $1.0^{(L)}$ |
| 2,6-Dimethylaniline | 0.67 | $0.30^{(L)}$ |
| Prilocaine | 1.0 | --- |

| | | |
|---|---|---|
| 2-Diethylaminoaceto-2,4-xylidine | 1.33 | 1.25[(L)] |
| Lidocaine | 2.14 | --- |
| n-Dichloroacetyl-2,6-xylidine | 2.98 | 0.45[(L)] |

[(P)] designates a prilocaine related compound.
[(L)] designates a lidocaine related compound.

The relative retention time with reference to prilocaine for prilocaine related compound B and lidocaine are about 1.09 and 2.14 respectively.

Inject reference solution (a) and (b). The test is not valid unless the resolution between the peaks due to prilocaine and prilocaine related compound B is not less than 1.4 in the chromatogram obtained with reference solution (b). The relative standard deviation for replicate injections is not more than 5.0 per cent in the chromatogram obtained with reference solution (a).

Inject reference solution (a) and the test solution. In the chromatogram obtained with the test solution, the area of any peak corresponding to o-toluidine is not more than twice the area of prilocaine peak in the chromatogram obtained with reference solution (a) (2.0 per cent), the area any peak corresponding to n-chloroacetyl-2,6-xylidine, 2,6-dimethylaniline, 2-diethylaminoaceto-2,4-xylidine and n-dichloroacetyl-2,6-xylidine, each of is not more than 0.1 times the area of lidocaine peak in the chromatogram obtained with reference solution (a) (0.1 per cent), the area of any other secondary peak is not more than 0.2 times the area of prilocaine peak in the chromatogram obtained with reference solution (a) (0.2 per cent). The sum of all the impurities other then o-toluidine is not more than (1.0 per cent).

**Microbial contamination** (2.2.9). 1 g is free from *Staphylococcus aureus,* and *Pseudomonas aeruginosa.* Total aerobic microbial count is not more than 100 CFU/g and total combined molds and yeasts is not more than 50 CFU/g. 1 g is free from Escherichia coli.

**Other tests.** Comply with the tests stated under Creams.

**Assay.** Determine by liquid chromatography (2.4.14). as described under Related substances with following modification.

*Reference solution.* A 0.02 per cent w/v solution each of *lidocaine RS* and *prilocaine hydrochloride RS* with mobile phase A.

Inject the reference solution. The column efficiency is not less than 5000 theoretical plates, the tailing factor is not more than 1.5 for prilocaine peak and the relative standard deviation for replicate injections is not more than 2.0 per cent.

Inject the reference solution and the test solution.

Calculate the content of $C_{14}H_{22}N_2O$ and $C_{13}H_{20}N_2O$ in the cream.

1 mg of prilocaine hydrochloride, $C_{13}H_{21}ClN_2O$ is equivalent to 0.86 mg of prilocaine $C_{13}H_{20}N_2O$.

**Storage.** Preserve in collapsible tubes, at a temperature of not exceeding 30°. Do not freeze.

**Labelling.** The label states the strength in terms of the equivalent amount of prilocaine.