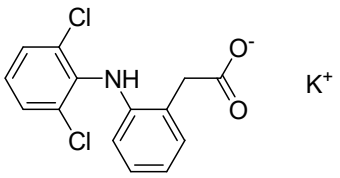
Diclofenac Potassium



$C_{14}H_{10}Cl_2KNO_2$ Mol. Wt. 334.2

Diclofenac Potassium is benzene acetic acid, 2-[(2,6-dichlorophenyl)amino]-,monopotassium salt.

Diclofenac Potassium contains not less than 99.0 per cent and not more than 101.0 per cent of $C_{14}H_{10}Cl_2KNO_2$, calculated on the dried basis.

Category.Analgesic, anti-inflammatory.

Description.A white to off white or slightly yellowish crystalline powder, slightly hygroscopic.

Identification

A. Determine by infrared absorption spectrophotometry (2.4.6). Compare the spectrum with that obtained with *diclofenac potassium IPRS* or with the reference spectrum of diclofenac potassium.

B. When examined in the range 230 nm to 360 nm (2.4.7). A 0.001 per cent w/v solution in *methanol* shows an absorption maximum as obtained with *diclofenac potassium IPRS* of the same concentration.

C. To 0.5 g, add 10 ml of *water*, stir and add water until the substance is dissolved. Add 2 ml of *7M hydrochloride acid*, stir for 60 minutes, and filter with the aid of a vacuum. Neutralize with *5M sodium hydroxide*. Take 1 ml of the solution, add 1 ml of *2 M acetic acid* and 1ml of freshly prepared 10 per cent w/v solution of *sodium cobaltinitrite*. A yellow or orange yellow precipitate is formed immediately.

Tests

pH (2.4.24). 7.0 to 8.5, determined in 1.0 per cent w/v solution.

Related substances. Determine by liquid chromatography (2.4.14)

Buffer solution. A mixture of equal volumes of *0.01M orthophosphoric acid* and *0.01M monobasic sodium phosphate,* adjusted to pH 2.5, with additional portions of the appropriate components.

Solvent mixture. 70 volumes of *methanol* and 30 volumes of *water*.

Test solution. Dissolve 75 mg of the substance under examination in the solvent mixture and dilute to 100.0 ml with the solvent mixture.

Reference solution (a). A solution containing 0.004 per cent w/v of *diehtyl phthalate*, 0.05 per cent w/v of *diclofenac potassium IPRS* and 0.00225 per cent w/v of *diclofenac related compound A IPRS {N-(2,6-dichlorophenyl)indolin-2-one}* in the solvent mixture.

Reference solution (b). A 0.015 per cent w/v solution of *diclofenac related compound A IPRS* in *methanol.* Dilute 1.0 ml of the solution to 100.0 ml with the solvent mixture.

Chromatographic system
- a stainless steel column 25 cm x 4.6 mm, packed with octylsilane bonded to porous silica (5 µm),
- mobile phase: a mixture of 70 volumes of *methanol* and 30 volumes of the buffer solution,
- flow rate: 1 ml per minute,
- spectrophotometer set at 254 nm,
- injection volume: 30 µl.

The relative retention time with reference to diclofenac potassium for diethyl phthalate and diclofenac related compound A is about 0.5 and 0.7 respectively.

Inject reference solution (a) and (b). The test is not valid unless the resolution between the peaks due to diethyl phthalate and diclofenac related compound A is not less than 4.0 in the chromatogram obtained with reference solution (a). The relative standard deviation for replicate injections is not more than 5.0 per cent in the chromatogram obtained with reference solution (b).

Inject reference solution (b) and the test solution. In the chromatogram obtained with the test solution, the area of any peak corresponding to diclofenac related compound A is not more than 0.75 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.15 per cent), the area of any other secondary peak is not more than 0.5 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.1 per cent) and the sum of the areas of all the secondary peaks is not more than twice the area of the principal peak in the chromatogram obtained with reference solution (b) (0.4 per cent). Ignore any peak with an area less than 0.25 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.05 per cent).

Heavy metals (2.3.13). 1.0 g complies with the limit test for heavy metals, Method B (20 ppm).

Loss on drying (2.4.19). Not more than 0.5 per cent, determined on 1.0 g by drying at 105° under vacuum for 3 hours.

Assay. Dissolve 0.3 g in 50 ml of *anhydrous glacial acetic acid.*Titrate with *0.1M perchloric acid*, determining the end point potentiometrically (2.4.25). Carry out a blank titration.

1 ml of *0.1 M perchloric acid* is equivalent to 0.03342 g of $C_{14}H_{10}Cl_2KNO_2$.

Storage. Store protected from light and moisture, at temperature not exceeding 30°.

Solubility.

Diclofenac Potassium. Freely soluble in *methanol*; soluble in *ethanol*; sparingly soluble in *water* and slightly soluble in *acetone.*