Chlorhexidine Mouthwash

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Manufacturers, regulatory authorities, health authorities, researchers, and other stakeholders are invited to provide their feedback and comments on this draft proposal. Manufacturers are also invited to submit samples of their products to the IPC to ensure that the proposed monograph adequately controls the quality of the product(s) they manufacture. Comments and samples received after the last date will not be considered by the IPC before finalizing the monograph.

Please send any comments you may have on this draft document to lab.ipc@gov.in, with a copy to Dr. Gaurav Pratap Singh (email: gpsingh.ipc@gov.in) before the last date for comments.

Document History and Schedule for the Adoption Process

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Further follow-up action as required.	

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Change **to**: **Chlorhexidine Mouthwash**

Chlorhexidine Mouthwash contains Chlorhexidine Gluconate Solution in a suitable flavoured and coloured vehicle.

Chlorhexidine Mouthwash contains not less than 95.0 per cent and not more than 105.0 per cent of the stated amount of chlorhexidine gluconate, $C_{22}H_{30}Cl_2N_{10},2C_6H_{12}O_7$.

Usual strengths. 0.2 per cent w/v; 0.4 per cent w/v; 0.5 per cent w/v; 4 per cent w/v; 20 per cent w/v.

Identification

In the Assay, the principal peak in the chromatogram obtained with the test solution corresponds to the peak in the chromatogram obtained with reference solution (a).

Tests

pH (2.4.24). 5.0 to 7.0.

Alcohol content. Not less than 90.0 per cent and not more than 115.0 per cent.

Determine by gas chromatography (2.4.13).

Internal standard solution. A 5.0 per cent v/v solution of *n-propyl alcohol* in *water*.

Test solution. Transfer 2.5 g of the mouthwash to a 28-ml screw-capped vial, add 5.0 ml of the internal standard solution and dilute with water almost filling the vial. Cap the vial and mix the solution with vortex mixer for 15 seconds.

Reference solution. Transfer 0.25 g of *ethanol* to a 28-ml screw-capped vial containing 3.0 ml of *water,* add 5.0 ml the internal standard solution and dilute with water almost filling the vial. Cap the vial, mix the solution with vortex mixer for 15 seconds.

Chromatographic system
- a capillary column 30 m × 0.53 mm, packed with 5.0 per cent phenyl and 95 per cent methylpolysiloxane (film thickness 1.5 µm) (Such as DB-5),
- temperature: column 35° (maintain at the initial temperature until the alcohol peak elute), 35° to 225° @ 30° per minute and hold at 225° for 2 minutes,
  inlet port 250° and detector at 275°,
- flame ionization detector,
- split ratio: 10:1,
- flow rate 0.5 ml per minutes, using helium as carrier gas,
- injection volume: 0.5 µl.

The relative retention time with reference to alcohol for n-propyl alcohol is about 1.5.

Inject the reference solution. The test is not valid unless resolution between the peaks due to alcohol and n-propyl alcohol is not less than 2.0, the tailing factor is not more than 3.0 and the relative standard deviation for replicate injections is not more than 2.0 per cent, for alcohol peak.

Inject the reference solution and test solution.

Calculate the content of alcohol, C_2H_5OH.

***p*-Chloroaniline**. Not more than 0.25 per cent.

Determine by liquid chromatography (2.4.14).

Solvent mixture. Dissolve 13.8 g of *sodium dihydrogen orthophosphate* in 750 ml of *water*, adjusted to pH 3.0 with *orthophosphoric acid,* and dilute to 1000 ml with *water*.

Test solution. Dilute 10.0 ml of mouthwash to 25.0 ml with the solvent mixture.

Reference solution (a). A 0.0001 per cent w/v solution of *p-chloroaniline IPRS* in the solvent mixture.

Reference solution (b). A solution containing 0.005 per cent w/v of *chlorhexidine acetate IPRS* and 0.0001 per cent w/v of *p-chloroaniline IPRS* in the solvent mixture.

Chromatographic system

- a stainless steel column 25 cm x 4.6 mm, packed with base-deactivated octadecylsilane bonded to porous silica (5 µm) (Such as Symmetry C18),
- column temperature:40°,
- mobile phase: A. a mixture of 70 volume of a buffer solution prepared by dissolving 13.8 g of *sodium dihydrogen orthophosphate* and 5 ml of *triethylamine* in 750 ml of *water*, adjusted to pH 3.0 with *orthophosphoric acid* and dilute to 1000 ml with *water,* and 30 volumes of *acetonitrile,*
  B. *acetonitrile*,
- a gradient programme using the conditions given below,
- flow rate: 1.5 ml per minute,
- spectrophotometer set at 239 nm,
- injection volume: 50 µl.

Time (in min.)	Mobile phase A (per cent v/v)	Mobile phase B (per cent v/v)
0	100	0
9	100	0
10	45	55
15	45	55
16	100	0
21	100	0

The relative retention time with reference to chlorhexidine for *p*-chloroaniline is about 1.3.

Inject reference solution (b). The test is not valid unless the resolution between the peaks due to chlorhexidine and *p*-chloroaniline is not less than 3.0 and the relative standard deviation for replicate injections is not more than 1.0 per cent, for chlorhexidine peak and not more than 5.0 per cent, for *p*- chloroaniline peak.

Inject reference solution (a) and the test solution.

Calculate the content of *p*-chloroaniline in the mouthwash.

Other tests. Comply with the tests stated under Oral liquids.

Assay. Determine by liquid chromatography (2.4.14).

Test solution. Dilute a suitable quantity of the mouthwash with mobile phase A to obtain a solution containing 0.006 per cent w/v of Chlorhexidine Gluconate.

Reference solution (a). A 0.005 per cent w/v solution of *chlorhexidine acetate IPRS* in mobile phase A.

Reference solution (b). A solution containing 0.005 per cent w/v *chlorhexidine acetate IPRS* and 0.0001 per cent w/v of *p-chloroaniline IPRS* in mobile phase A.

Use the chromatographic system as described under *p*-chloroaniline.

Inject reference solution (b). The test is not valid unless the resolution between the peaks due to chlorhexidine and *p*-chloroaniline is not less than 3.0 and the relative standard deviation for replicate injections is not more than 1.0 per cent, for chlorhexidine peak and not more than 5.0 per cent, for *p*-chloroaniline peak.

Inject reference solution (a) and the test solution.

Calculate the content of $C_{22}H_{30}Cl_2N_{10},2C_6H_{12}O_7$ in the mouthwash.

1 mg of chlorhexidine acetate, $C_{26}H_{38}Cl_2N_{10}O_4$ is equivalent to 1.435 mg of $C_{22}H_{30}Cl_2N_{10},2C_6H_{12}O_7$.

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

Labelling. Mouthwash intended solely for veterinary use is so labelled. Mouthwash intended for human use is labelled to indicate it is to be expectorated and not swallowed after rinsing.