IDENTIFICATION
Carry out the method for *thin-layer chromatography*, Appendix III A, using a silica gel precoated plate (Merck silica gel 60 plates are suitable) and a mixture of 20 volumes of *ethyl acetate* and 80 volumes of *toluene* as the mobile phase but allowing the solvent front to ascend 10 cm above the line of application. Apply separately to the plate 20 µl of each of the following solutions. For solution (1) crush one tablet in sufficient *ethanol* (*96%*) to produce a final solution containing approximately 0.035% w/v of Norethisterone, warm to 50° for 10 minutes, mix with the aid of ultrasound, allow to cool and centrifuge to obtain a clear supernatant liquid. Solution (2) contains 0.035% w/v of *norethisterone BPCRS* in *ethanol* (*96%*). After removal of the plate, allow it to dry in air and spray with a mixture of 30 volumes of *methanol* and 70 volumes of *sulphuric acid* and examine under *ultraviolet light* (*365 nm*). The Rf value of the principal spot in the chromatogram obtained with solution (1) is the same as that of the spot in the chromatogram obtained with solution (2).

TESTS
Uniformity of content
Tablets containing less than 2 mg of Norethisterone comply with the requirements stated under Tablets using the following method of analysis. Carry out the method for *liquid chromatography*, Appendix III D, using the following solutions. Solution (1) contains 0.007% w/v of *norethisterone BPCRS* in *methanol* (*60%*). For solution (2) disperse one tablet in 2 ml of *water* with the aid of ultrasound for 15 minutes, add sufficient *methanol* to produce 5 ml, centrifuge for 10 minutes and use the clear supernatant liquid.

The chromatographic procedure may be carried out using (a) a stainless steel column (25 cm × 4.6 mm) packed with *octadecylsilyl silica gel for chromatography* (10 µm) (Spherisorb ODS 1 is suitable), (b) a mixture of 28 volumes of *water* and 72 volumes of *methanol* as the mobile phase with a flow rate of 1 ml per minute and (c) a detection wavelength of 254 nm.

Calculate the content of $C_{20}H_{26}O_2$ in each tablet using the declared content of $C_{20}H_{26}O_2$ in *norethisterone BPCRS*.

ASSAY
For tablets containing less than 2 mg of norethisterone
Calculate the average of the 10 individual results obtained in the test for Uniformity of content.

For tablets containing 2 mg or more of norethisterone
Weigh and powder 20 tablets. Carry out the method for *liquid chromatography*, Appendix III D, using the conditions described in the test for Uniformity of content and using the following solutions. Solution (1) contains 0.02% w/v of *norethisterone BPCRS* in *methanol* (60%). For solution (2) mix a quantity of the powdered tablets containing 5 mg of Norethisterone in 10 ml of *water* with the aid of ultrasound for 15 minutes, add sufficient *methanol* to produce 25 ml, centrifuge for 10 minutes and use the supernatant liquid.

The chromatographic procedure described under Uniformity of content may be used.

Calculate the content of $C_{20}H_{26}O_2$ using the declared content of $C_{20}H_{26}O_2$ in *norethisterone BPCRS*.

STORAGE
Norethisterone Tablets should be protected from light.

Norfloxacin Eye Drops

Action and use
Fluoroquinolone antibacterial.

DEFINITION
Norfloxacin Eye Drops are a sterile solution of Norfloxacin in Purified Water.

The eye drops comply with the requirements stated under Eye Preparations and with the following requirements.

Content of norfloxacin, $C_{16}H_{18}FN_3O_3$
95.0 to 105.0% of the stated amount.

IDENTIFICATION
A. The *light absorption*, Appendix II B, in the range 210 to 400 nm of a solution prepared by diluting the eye drops with 0.1M *hydrochloric acid* to contain 0.006% w/v of Norfloxacin exhibits the same maxima and minima as that of a 0.006% w/v solution of *norfloxacin BPCRS* in 0.1M *hydrochloric acid*.

B. In the Assay, the principal peak in the chromatogram obtained with solution (1) has the same retention time as the principal peak in the chromatogram obtained with solution (2).

TESTS
Acidity
pH, 5.0 to 5.4, Appendix V L.

ASSAY
Carry out the method for *liquid chromatography*, Appendix III D, protected from light, using the following solutions. For solution (1) dilute a suitable volume of the eye drops with 0.1% v/v *orthophosphoric acid* to produce a solution containing 0.006% w/v of Norfloxacin. Solution (2) contains 0.006% w/v of *norfloxacin BPCRS* in 0.1% v/v *orthophosphoric acid*.

The chromatographic procedure may be carried out using (a) a stainless steel column (30 cm × 3.9 mm) packed with *end-capped octadecylsilyl silica gel for chromatography* (10 µm) (Waters µBondapak C18 is suitable) and maintained at 50°, (b) a mixture of 150 volumes of *acetonitrile* and 850 volumes of 0.1% v/v *orthophosphoric acid* as the mobile phase with a flow rate of 2 ml per minute and (c) a detection wavelength of 278 nm. Inject 10 µl of each solution.

Precondition the column using 0.01M *anhydrous sodium dihydrogen orthophosphate*, adjusted to pH 4.0 with *orthophosphoric acid*, at a flow rate of 0.5 ml per minute for 8 hours. Equilibrate the column with the mobile phase for about 30 minutes before starting the chromatography. When the chromatograms are recorded under the conditions described above, the retention time of norfloxacin is about 4 minutes.

The assay is not valid unless the *symmetry factor* of the principal peak in the chromatogram obtained with solution (2) is less than 2.0.

Inject solution (2) six times. The assay is not valid unless the relative standard deviation of the area of the principal peak is at most 2.0%.

Calculate the content of $C_{16}H_{18}FN_3O_3$ in the eye drops using the declared content of $C_{16}H_{18}FN_3O_3$ in *norfloxacin BPCRS*.

STORAGE
Norfloxacin Eye Drops should be protected from light.