Reference solution (a). Dissolve 2 mg of testosterone isocaproate for system suitability CRS (containing impurities A, B, C, D, E, F and G) in 10 ml of the mobile phase.

Reference solution (b). Dilute 10.0 ml of the test solution to 100.0 ml with the mobile phase. Dilute 1.0 ml of this solution to 20.0 ml with the mobile phase.

Reference solution (c). Dissolve 20.0 mg of testosterone isocaproate CRS in the mobile phase and dilute to 100.0 ml with the mobile phase.

Column:
- size: l = 0.25 m, Ø = 4.6 mm;
- stationary phase: end-capped octadecylsilyl silica gel for chromatography R (5 µm);
- temperature: 40 °C.


Flow rate: 1.0 ml/min.

Detection: spectrophotometer at 240 nm.

Injection: 20 µl of the test solution and reference solutions (a) and (b).

Run time: twice the retention time of testosterone isocaproate.

Identification of impurities: use the chromatogram supplied with testosterone isocaproate for system suitability CRS and the chromatogram obtained with reference solution (a) to identify the peaks due to impurities A, B, C, D, E, F and G.

Relative retention with reference to testosterone isocaproate (retention time = about 14 min): impurity A = about 0.2; impurity B = about 0.4; impurity C = about 0.5; impurity D = about 0.7; impurity G = about 0.8; impurity E = about 1.1; impurity F = about 1.4.

System suitability: reference solution (a):
- peak-to-valley ratio: minimum 2.5, where \( H_a \) = height above the baseline of the peak due to impurity E and \( H_v \) = height above the baseline of the lowest point of the curve separating this peak from the peak due to testosterone isocaproate.

Limits:
- impurities A, B, C, D, E, F, G: for each impurity, not more than the area of the principal peak in the chromatogram obtained with reference solution (b) (0.5 per cent);
- unspecified impurities: for each impurity, not more than 0.2 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.10 per cent);
- total: not more than twice the area of the principal peak in the chromatogram obtained with reference solution (b) (1.0 per cent);
- disregard limit: 0.1 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.05 per cent).

Free acid. Dissolve 0.44 g in 10 ml of ethanol (96 per cent) R, previously neutralised to bromothymol blue solution R3, and titrate immediately with 0.01 M sodium hydroxide, using 0.1 ml of bromothymol blue solution R3 as indicator. Not more than 0.6 ml of 0.01 M sodium hydroxide is required to change the colour of the indicator to blue.

Loss on drying (2.2.32): maximum 0.5 per cent, determined on 1.000 g over diphosphorus pentoxide R at a pressure not exceeding 0.7 kPa.

ASSAY

Liquid chromatography (2.2.29) as described in the test for related substances with the following modification.

Injection: 20 µl of the test solution and reference solution (c). Calculate the percentage content of C_{25}H_{38}O_3 from the declared content of testosterone isocaproate CRS.

IMPURITIES

Specified impurities: A, B, C, D, E, F, G.

A. R = H: testosterone,

B. R = CO-CH_3: 3-oxoandrost-4-en-17β-yl acetate (testosterone acetate),

C. R = CO-C_2H_5: testosterone propionate,

D. R = CO-CH(CH_3)_2: 3-oxoandrost-4-en-17β-yl 2-methylpropanoate (testosterone isobutyrate),

E. R = CO-[CH_2]_4-CH_3: 3-oxoandrost-4-en-17β-yl hexanoate (testosterone caproate),

F. R = CO-[CH_2]_5-CH_3: testosterone enantate,

G. 3-oxoandrost-4-en-17α-yl 4-methylpentanoate (epitestosterone isocaproate).

TESTOSTERONE PROPIONATE

Testosteroni propionas

C_{22}H_{32}O_3

M, 344.5

[57-85-2]

DEFINITION

3-Oxoandrost-4-en-17β-yl propanoate.
Content: 97.0 per cent to 103.0 per cent (dried substance).

CHARACTERS
Appearance: white or almost white powder or colourless crystals.
Solubility: practically insoluble in water, freely soluble in acetone and in alcohol, soluble in fatty oils.

IDENTIFICATION
Infrared absorption spectrophotometry (2.2.24).

TESTS
Specific optical rotation (2.2.7): +84 to +90 (dried substance).
Dissolve 0.250 g in ethanol R and dilute to 25.0 ml with the same solvent.

Related substances. Liquid chromatography (2.2.29).
Test solution. Dissolve 50.0 mg of the substance to be examined in methanol R and dilute to 50.0 ml with the same solvent.
Reference solution (a). Dissolve 2 mg of the substance to be examined and 2 mg of testosterone acetate CRS in methanol R and dilute to 50.0 ml with the same solvent.
Reference solution (b). Dilute 1.0 ml of the test solution to 100.0 ml with methanol R.
Column:
- size: l = 0.25 m, Ø = 4.6 mm,
- stationary phase: octadecylsilica gel for chromatography R (5 µm).
Flow rate: 1.5 ml/min.
Detection: spectrophotometer at 254 nm.
Injection: 20 µl.
Run time: twice the retention time of testosterone propionate.
Relative retention with reference to testosterone propionate (retention time = about 9 min): impurity C = about 0.5; impurity A = about 0.7; impurity D = about 0.8; impurity B = about 1.4.
System suitability: reference solution (a):
- resolution: minimum 4.0 between the peaks due to testosterone propionate and to impurity A.
Limits:
- any impurity: not more than 0.5 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.5 per cent),
- total: not more than the area of the principal peak in the chromatogram obtained with reference solution (b) (1.0 per cent),
- disregard limit: 0.05 times the area of the principal peak in the chromatogram obtained with reference solution (b) (0.05 per cent).
Loss on drying (2.2.32): maximum 0.5 per cent, determined on 0.500 g by drying in an oven at 105 °C for 2 h.

ASSAY
Dissolve 25.0 mg in ethanol R and dilute to 250.0 ml with the same solvent. Dilute 10.0 ml of the solution to 100.0 ml with ethanol R. Measure the absorbance (2.2.25) at the maximum at 240 nm.

Calculate the content of \( \text{C}_{15}\text{H}_{25}\text{ClN}_{2}\text{O}_{2} \) taking the specific absorbance to be 490.

IMPURITIES
Specified impurities: A, B, C, D.
Other detectable impurities: E.

A. \( \text{R} = \text{CO-CH}_{3} \): 3-oxoandrostan-4-en-17β-yl acetate
(testosterone acetate),
B. \( \text{R} = \text{CO-CH(CH}_{3})_{2} \): 3-oxoandrostan-4-en-17β-yl 2-methylpropanoate
(testosterone isobutyrate),
C. \( \text{R} = \text{H} \): testosterone,
D. 3-oxoandrosta-1,4-dien-17β-yl propanoate,
E. 3-oxoandrosta-4,6-dien-17β-yl propanoate.

TETRACAINE HYDROCHLORIDE
Tetracaini hydrochloridum

**DEFINITION**
Tetracaine hydrochloride contains not less than 99.0 per cent and not more than the equivalent of 101.0 per cent of 2-(dimethylamino)ethyl 4-(butylamino)benzoate hydrochloride, calculated with reference to the dried substance.
ERRATA

In the following monographs, after the heading ‘Other detectable impurities’ in the Impurities section, read:
‘(the following substances would, if present at a sufficient level, be detected by one or other of the tests in the monograph. They are limited by the general acceptance criterion for other/unspecified impurities and/or by the general monograph Substances for pharmaceutical use (2034). It is therefore not necessary to identify these impurities for demonstration of compliance. See also 5.10. Control of impurities in substances for pharmaceutical use)’

<table>
<thead>
<tr>
<th>Substance</th>
<th>Substance</th>
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<tbody>
<tr>
<td>Articaine hydrochloride (1688)</td>
<td>Norethisterone acetate (0850)</td>
</tr>
<tr>
<td>Biperiden hydrochloride (1074)</td>
<td>Oxaliplatin (2017)</td>
</tr>
<tr>
<td>Caffeine (0267)</td>
<td>Potassium clavulanate (1140)</td>
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<tr>
<td>Caffeine monohydrate (0268)</td>
<td>Potassium clavulanate, diluted (1653)</td>
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<tr>
<td>Ibuprofen (0721)</td>
<td>Testosterone propionate (0297)</td>
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<tr>
<td>Ifosfamide (1529)</td>
<td>Thiamine hydrochloride (0303)</td>
</tr>
<tr>
<td>Metformin hydrochloride (0931)</td>
<td>Thiamine nitrate (0531)</td>
</tr>
<tr>
<td>Naphazoline hydrochloride (0730)</td>
<td>Tranexamic acid (0875)</td>
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