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ACACIA

Acaciae gummi

DEFINITION

Acacia is the air-hardened, gummy exudate flowing naturally from or obtained by incision of the trunk and branches of *Acacia senegal* L. Willdenow, other species of *Acacia* of African origin and *Acacia seyal Del.*

CHARACTERS

Acacia is almost completely but very slowly soluble, after about 2 h, in twice its mass of water leaving only a very small residue of vegetable particles; the liquid obtained is colourless or yellowish, dense, viscous, adhesive, translucent and weakly acid to blue litmus paper. Acacia is practically insoluble in alcohol.

IDENTIFICATION

A. Acacia occurs as yellowish-white, yellow or pale amber, sometimes with a pinkish tint, friable, opaque, spheroidal, oval or reniform pieces (tears) of a diameter from about 1 cm to 3 cm, frequently with a cracked surface, easily broken into irregular, whitish or slightly yellowish angular fragments with conchoidal fracture and a glassy and transparent appearance. In the centre of an unbroken tear there is sometimes a small cavity.

B. Reduce to a powder (355) (*2.9.12*). The powder is white or yellowish-white. Examine under a microscope using *glycerol R* (50 per cent *V/V*). The powder presents angular, irregular, colourless, transparent fragments. Only traces of starch or vegetable tissues are visible. No stratified membrane is apparent.

C. Examine the chromatograms obtained in the test for glucose and fructose. The chromatogram obtained with the test solution shows three zones due to galactose, arabinose and rhamnose. No other important zones are visible, particularly in the upper part of the chromatogram.

D. Dissolve 1 g of the powdered drug (355) (*2.9.12*) in 2 ml of *water R* by stirring frequently for 2 h. Add 2 ml of *alcohol R*. After shaking, a white, gelatinous mucilage is formed which becomes fluid on adding 10 ml of *water R*.

TESTS

Solution S. Dissolve 3.0 g of the powdered drug (355) (*2.9.12*) in 25 ml of *water R* by stirring for 30 min. Allow to stand for 30 min and dilute to 30 ml with *water R*.

Insoluble matter. To 5.0 g of the powdered drug (355) (*2.9.12*) add 100 ml of *water R* and 14 ml of *dilute hydrochloric acid R*, boil gently for 15 min, shaking frequently, and filter while hot through a tared sintered-glass filter (*2.1.2*). Wash with hot *water R* and dry at 100-105 °C. The residue weighs not more than 25 mg (0.5 per cent).

Glucose and fructose. Examine by thin-layer chromatography (*2.2.27*), using a *TLC silica gel plate R*.

Test solution. To 0.100 g of the powdered drug (355) (*2.9.12*) in a thick-walled centrifuge tube add 2 ml of a 100 g/l solution of *trifluoroacetic acid R*, shake vigorously to dissolve the forming gel, stopper the tube and heat the mixture at 120 °C for 1 h. Centrifuge the hydrolysate, transfer the clear supernatant carefully into a 50 ml flask, add 10 ml of *water R* and evaporate the solution to dryness under reduced pressure. To the resulting clear film add 0.1 ml of *water R* and 0.9 ml of *methanol R*. Centrifuge to separate the amorphous precipitate. Dilute the supernatant, if necessary, to 1 ml with *methanol R*.

Reference solution. Dissolve 10 mg of *arabinose R*, 10 mg of *galactose R*, 10 mg of *glucose R*, 10 mg of *rhamnose R* and 10 mg of *xylose R* in 1 ml of *water R* and dilute to 10 ml with *methanol R*.

Apply to the plate as bands 10 µl of each solution. Develop over a path of 10 cm using a mixture of 10 volumes of a 16 g/l solution of *sodium dihydrogen phosphate R*, 40 volumes of *butanol R* and 50 volumes of *acetone R*. Dry the plate in a current of warm air for a few minutes and develop again over a path of 15 cm using the same mobile phase. Dry the plate at 110 °C for 10 min, spray with *anisaldehyde solution R* and heat again at 110 °C for 10 min. The chromatogram obtained with the reference solution shows five clearly separated coloured zones due to galactose (greyish-green to green), glucose (grey), arabinose (yellowish-green) xylose (greenish-grey to yellowish-grey) and rhamnose (yellowish-green), in order of increasing R_F value. The chromatogram obtained with the test solution shows no grey zone and no greyish-green zone between the zones corresponding to galactose and arabinose in the chromatogram obtained with the reference solution.

Starch, dextrin and agar. To 10 ml of solution S previously boiled and cooled add 0.1 ml of *0.05 M iodine*. No blue or reddish-brown colour develops.

Sterculia gum

A. Place 0.2 g of the powdered drug (355) (*2.9.12*) in a 10 ml ground-glass-stoppered cylinder graduated in 0.1 ml. Add 10 ml of *alcohol (60 per cent V/V) R* and shake. Any gel formed occupies not more than 1.5 ml.

B. To 1.0 g of the powdered drug (355) (*2.9.12*) add 100 ml of *water R* and shake. Add 0.1 ml of *methyl red solution R*. Not more than 5.0 ml of *0.01 M sodium hydroxide* is required to change the colour of the indicator.

Tannins. To 10 ml of solution S add 0.1 ml of *ferric chloride solution R1*. A gelatinous precipitate is formed, but neither the precipitate nor the liquid shows a dark blue colour.

Tragacantha. Examine the chromatograms obtained in the test for glucose and fructose. The chromatogram obtained with the test solution shows no greenish-grey to yellowish-grey zone corresponding to the zone of xylose in the chromatogram obtained with the reference solution.

Loss on drying (*2.2.32*). Not more than 15.0 per cent, determined on 1.000 g of the powdered drug (355) (*2.9.12*) by drying in an oven at 105 °C.

Total ash (*2.4.16*). Not more than 4.0 per cent.

Microbial contamination. Total viable aerobic count (*2.6.12*) not more than 10^4 micro-organisms per gram, determined by plate count. It complies with the test for *Escherichia coli* (*2.6.13*).

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ACACIA, SPRAY-DRIED

Acaciae gummi dispersione desiccatum

DEFINITION

Spray-dried acacia is obtained from a solution of acacia.