

## Monograph

Reference is made to starch monographs and tests of  
**European Pharmacopoeia, Fourth Edition (2002)**

### TAPIOCA STARCH

#### *Amylum Manihot*

##### DEFINITION

Tapioca starch is obtained from the root of the cassava plant  
*Manihot utilisima*, Pohl (Fam. Euphorbiaceae).

##### CHARACTERS

A very fine white powder practically insoluble in cold water and in alcohol. Tapioca starch does not contain starch grains of any other origin. It may contain a minute quantity, if any, of fragments of the tissue of the original plant.

##### IDENTIFICATION

- A. Examined under a microscope using equal volumes of *glycerol R* and *water R*, it presents spherical granules with one truncated side, typically 5 µm to 35 µm in diameter, typically having a circular or several-rayed central clefts (Ref. BP).
- B. Suspend 1 g in 50 ml of *water R*, boil for 1 min and cool. A thin cloudy mucilage is formed.
- C. To 1 ml of the mucilage obtained in identification test B, add 0.05 ml of *iodine solution R1*. A dark-blue colour is produced which disappears on heating.

##### TESTS

**pH** (2.2.3). Shake 5.0 g with 25.0 ml of *carbon dioxide-free water R* for 60 s. Allow to stand for 15 min. The pH of the solution is 5.0 to 8.0.

**Iron** (2.4.9) Shake 1.5 g with 15 ml of *dilute hydrochloric acid R*. Filter. The filtrate complies with the limit test for iron (10 ppm).

**Foreign matter** (2.8.2). Examined under a microscope using a mixture of equal volumes of *glycerol R* and *water R*, not more than traces of cell walls and of cytoplasmic residues are present.

**Total protein**. Not more than 0.1 per cent of total protein (corresponding to 0.017 per cent N<sub>2</sub>, conversion factor: 5.7), determined on 6.0 g by sulphuric acid digestion (2.5.9) modified as follows: wash any adhering particles from the neck into the flask with 25 ml of *sulphuric acid R*; continue the heating until a clear solution is obtained; add 45 ml of *strong sodium hydroxide solution R*.

**Oxidising substances** (2.5.30). It complies with the test for oxidising substances.

**Sulphur dioxide** (2.5.29). Not more than 50 ppm.

**Loss on drying** (2.2.32). Not more than 14.0 per cent (Ref. BP), determined on 1.000 g by drying in an oven at 130 °C for 90 min.

**Sulphated ash**. (2.4.14). Not more than 0.6 per cent, determined on 1.0 g.

**Microbial contamination**. Total viable aerobic count (2.6.12) not more than 10<sup>3</sup> bacteria and not more than 10<sup>2</sup> fungi per gram, determined by plate-count. It complies with the test for *Escherichia coli* (2.6.13)