

hours after. If the average maximum rise in temperature is not greater than 0.6° , the water is considered non-pyrogenic.

B.P. requirements include limit tests for copper, iron and lead, chloride, sulphate, ammonia, oxidisable matter and non-volatile matter, and tests for sterility.

Uses. Water for injection is used as the solvent in the preparation of sterile, aqueous solutions intended for parenteral administration. For this purpose it may be replaced by freshly distilled water, prepared by the process described for water for injection but omitting the sterilisation, provided that the final preparation is immediately sterilised.

Storage. When stored in containers closed by cotton wool, water for injection should be used within one month of preparation; when stored in containers closed by fusion of the glass, or by some equally effective method, it may be stored for a longer period.

ARECA

(Arec.)

Areca

Synonyms: Arecæ Semina; Areca Nuts; Betel Nuts.

Areca consists of the dried, ripe seeds of *Areca catechu* Linn. (Fam. Palmæ).

The plant is a palm cultivated in tropical India, in the Philippines and in the East Indian Islands.

Standard.

Content of total alkaloids. Not less than 0.25 per cent., calculated as arecoline.

Description. *Macroscopical:* About 17 to 27 mm. long and 22 to 30 mm. wide, having the shape of a short, rounded cone; surface brownish, marked with a network of pale, depressed lines running chiefly from the hilum which is situated at the base; occasional thin fragments of silvery-buff inner part of the pericarp occur, especially in the lower part of the seed; very hard; transverse section exhibits a ruminate endosperm, the dark folds of the testa ramifying throughout the white endosperm; no characteristic odour; taste astringent, bitter.

Microscopical: The diagnostic characters are:—cells of the endosperm with thick, colourless, cellulosic walls, perforated by large, circular, simple pits and containing small amounts of protein and oil; sclerenchymatous cells of the testa with moderately thick, lignified and pitted walls; cells of the ruminations with thin, pitted walls and dark reddish-brown contents; the thick-walled, fibrous cells from the funicle.

Ash. Not more than 2 per cent.

Assay. Weigh accurately about 10 g., in moderately fine powder; transfer to a suitable glass vessel, add 50 ml. of solvent ether, shake continuously for 10 minutes; add 7 ml. of a saturated solution of sodium bicarbonate and shake frequently during one hour; transfer all the contents to a percolator plugged with cotton wool and continue percolation with solvent ether until the alkaloids are completely extracted; transfer the percolate to a separator, add 5 ml. of a saturated solution of sodium sulphate, shake well, allow to separate and reject the lower layer; to the ethereal solution add 10 ml. of N/20 sulphuric acid, shake well, separate and wash the ether with four successive quantities of 10 ml. of water, adding the washings to the acid. Titrate with N/20 sodium hydroxide, using methyl red solution as indicator; each ml. of N/20 sulphuric acid is equivalent to 0.00776 g. of arecoline.

Powdered Drug. Areca, in powder (*Areca Pulvis* : *Arec. Pulv.*), possesses the diagnostic microscopical characters and complies with the Standard for content of total alkaloids and ash of the unground drug.

Constituents. Areca contains arecoline, $C_8H_{13}O_2N$, a volatile liquid alkaloid which forms crystalline salts. Other alkaloids present are guvacine (1 : 2 : 5 : 6-tetrahydropyridine-3-carboxylic acid), guvacoline, the methyl ester of guvacine, arecaidine (arecaine), its N-methyl derivative, and arecolidine. Arecoline is the methyl ester of arecaidine. The drug also contains about 15 per cent. of a red, amorphous tannin and about 14 per cent. of fat, together with resin and mucilage.

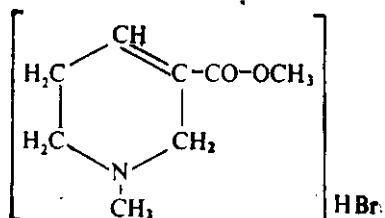
Action and Uses. Areca is used to expel tapeworm. A decoction (1 in 10) is usually given in the morning on a fasting stomach and no food allowed for six hours. An enema half the strength of the decoction has also been used. Areca is used in veterinary practice as a vermifuge for tapeworm and roundworm in dogs. In tropical countries it is used as a masticatory.

Dose. 1 to 4 grammes (15 to 60 grains).

ARECOLINÆ HYDROBROMIDUM

(*Arecolin. Hydrobrom.*)

Arecoline Hydrobromide



Arecoline hydrobromide is the hydrobromide of arecoline, an alkaloid obtained from the seeds of *Areca catechu* Linn. (Fam. Palmæ).

Standard.

Content of $C_8H_{13}O_2N, \text{HBr}$. Not less than 99 per cent., calculated with reference to the substance dried over sulphuric acid *in vacuo*.

Description. A white, crystalline powder; odourless; taste bitter.

Solubility. Soluble in water (1 in 1), alcohol (1 in 10), and boiling alcohol (1 in 2); slightly soluble in ether and chloroform.

Identification Tests.

1. To 10 ml. of a 2 per cent. solution in water add 2 ml. of iodine solution; a red-brown precipitate is produced.
2. To 10 ml. of a 2 per cent. solution in water add 2 ml. of bromine solution; a yellow precipitate is produced.
3. It gives the reactions characteristic of bromides.

Melting-point. 168° to 175° .

Other alkaloids. Dissolve 0.25 g. in 5 ml. of water and add 1 ml. of dilute ammonia solution; no turbidity is produced.

Acidity. Dissolve 0.5 g. in 15 ml. of water and titrate with N/10 sodium hydroxide, using methyl red solution as indicator; not more than 0.2 ml. is required for neutralisation.