

## Constituents

Earlier investigation of *Arisarum vulgare*, *Arum italicum* and *Arum maculatum* revealed the presence of alkaloids (coniine and conicine) and saponins (Chauliaguet *et al.*, 1897; Hebert and Heim, 1898).

The corms of the plant growing in Egypt contain glucose, fructose, sucrose, raffinose and a mucilage (4.0%). The mucilage is composed of D-galactose, D-mannose, L-rhamnose, D-glucuronic acid and D-glucuronolactone. The corms contain citric and tartaric acids. The fatty acids of the plant oil (0.55%) were identified as oleic (65.2%), linoleic (19.5%), linolenic (1.42%), diene acids (3.16%) and saturated acids (10.72%).  $\beta$ -Sitosterol, stigmasterol, campesterol, dehydrocampesterol, a saturated aliphatic hydrocarbon and a saturated aliphatic alcohol were detected. The amino acids present included aspartic acid, glutamic acid, cystine, lysine, histidine, arginine, glycine, threonine, proline, tyrosine, valine, methionine, phenylalanine, isoleucine, leucine, and tryptophan (Ahmed *et al.*, 1968).

The following alkaloids have been isolated from tubers of the plant, growing in Morocco: two pyrrolidine alkaloids irniine (**151**), bgugaine (**152**), (Melhaoui *et al.*, 1992, 1993), irnidine (**153**), an alkylpyrrolidine alkaloid (-)-*R-N*-methyl-2-[9'-(2"-methoxyphenyl) nonyl]pyrrolidine (Melhaoui, 1998) and two piperidinol alkaloids, irnigaine [(2*S*,3*S*,6*R*)-3-hydroxy-2-methyl-6-(9'-phenylnonyl)piperidine] and *N*-methyl-irnigaine [(-)-(2*S*,3*S*,6*R*)-1,2-dimethyl-3-hydroxy-6-(9'-phenylnonyl)piperidine] (Melhaoui and Bodo, 1995).

Saponins were identified in *Arisarum vulgare* leaves and bulbs, acid hydrolysis of which gave oleanolic acid. Two flavonoids, vitexin and orientin, were identified (Pagani, 1982). The seeds contain gallic acid, caffeic acid and rutin (Kadri *et al.*, 2013).

The macro- and micromorphological characteristics of the corms were described (Elkiey *et al.*, 1967).

