

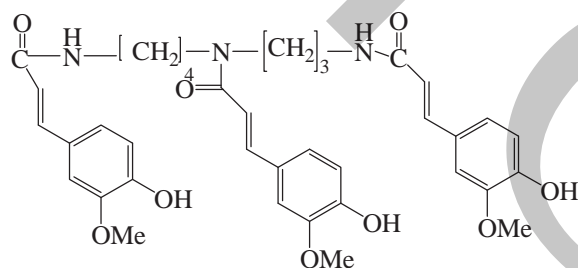
Table 2- Flavonoids of some species of the family Amaryllidaceae

Species	Plant Part	Alkaloids	References
1. <i>Crinum americanum</i>	B	4'-Hydroxy-7-methoxy-5'-methylflavanol and 4'-hydroxy-7-methoxyflavan	Ali <i>et al.</i> (1988b)
2. <i>Crinum asiaticum</i> var. <i>japonicum</i>	B	4'-Hydroxy-7-methoxyflavan	Min <i>et al.</i> (2001)
3. <i>Crinum augustum</i> .	B	4'-Hydroxy-7-methoxyflavan, 4'-hydroxy-7-methoxy-8-methylflavan, 2',4,4'-trihydroxychalcone and 2',4,4'-trihydroxy-3'-methoxychalcone	Ali <i>et al.</i> , (1988a); Abd El-Hafiz <i>et al.</i> , (1990)
4. <i>Crinum bulbispermum</i>	B	4'-Hydroxy-7-methoxyflavan-3-ol, 2(S),3',4'-dihydroxy-7-methoxyflavan, isolarrien (7-hydroxy-8-methoxyflavanone), liquiritigenin (7,4'-dihydroxyflavanone), 4-hydroxy-2',4'-dimethoxy-dihydrochalcone, and isoliquiritigenin, 4',4'-dihydroxy -2-methoxychalcone,	Ramadan <i>et al.</i> (2000); Khalifa (2001)
	F	3'-Methylquercetine- 3-O-glucoside, (isorhamnetin-3-O-glucoside), kaempferol-3-O-β-D-xylopyranosyl (1→3)β-D-glucopyranoside, kaempferol-3-O-glucoside, quercetin-3-O-glucoside and quercetin-3-O-β-D-(6-O-acetylglucopyranosyl) (1→3)β-D-glucopyranoside	Abou Donia <i>et al.</i> (2005).
	L	Kaempferol-3-O-xyloside	Ali <i>et al.</i> (1981a)
5. <i>Crinum latifolium</i>		4',7-Dihydroxy-3'-vinyloxyflavan and 4',7-dihydroxyflavan	Nguyen and Nguyen (2006)
6. <i>Crinum moorei</i>	B	4'-Hydroxy-7-methoxyflavan	Kamel (1996)
7. <i>Galanthus caucasicus</i>	Ap	Rutin, hyperoside and luteolin bioside	Tsakadze <i>et al.</i> (1977, 1998)
8. <i>Hippeastrum ananuca</i>		Two proanthocyanidins (3-hydroxy-7-methoxyflavan and 3-hydroxy-7-methoxy, 3',4'-methylenedioxyflavan)	Pacheo <i>et al.</i> (1980)
9. <i>Hippeastrum bicolor</i>	B	3-Hydroxy-7-methoxyflavanone, and 3-hydroxy-7-methoxy-3',4'-methylenedioxy flavanone	Sepulveda <i>et al.</i> (1982)
10. <i>Hippeastrum vittatum</i>	Wp	4'-Hydroxy-7-methoxyflavone	Mesbah <i>et al.</i> (1985)

Table 2: Flavonoids of some species of the family Amaryllidaceae (cont.)

Species	Plant Part	Alkaloids	References
11. <i>Lycoris aurea</i>		(2 <i>S</i>)-4'-Hydroxy-7-methoxyflavan, (2 <i>S</i>)-3',7-dihydroxy-4'-methoxyflavan, (2 <i>S</i>)-4',7-dihydroxyflavan, (2 <i>S</i>)-4',7-dihydroxy-8-methoxyflavan, (2 <i>S</i>)-4',7-dihydroxy-3'-methoxy-8-methylflavan, (2 <i>S</i>)-4,5,7-trihydroxy-8-methoxyflavanone, and 2,4'-dihydroxy-4-methoxydihydrochalcone	Yang <i>et al.</i> (2005b)
12. <i>Lycoris radiata</i>		4'-Methoxy-7-hydroxy-8-methylflavan	Numata <i>et al.</i> (1983)
13. <i>Zephyranthes candida</i>		Rutin, (2 <i>S</i>)-3',7-dihydroxy-4'-methoxyflavan, (2 <i>S</i>)-4'-hydroxy-7-methoxyflavan, (2 <i>S</i>)-4',7-dihydroxyflavan and 7-hydroxy-3',4'-methylenedioxyflavan	Wu <i>et al.</i> (2009b)
	Wpt	Kaempferol-3- <i>O</i> -rhamnoglucoside	Nakayama <i>et al.</i> (1978)
14. <i>Zephyranthes flava</i>	B	7,4'-Dihydroxy-3'-methoxyflavan, 7-methoxy-2'-hydroxy-4',5'-methylene dioxyflavan, 7-hydroxy-3',4'-methylenedioxyflavan and 7-glucosyloxy-3',4'-methylenedioxyflavan	Ghosal <i>et al.</i> (1985f)

Ap: aerial parts; B: bulbs; F: flowers; L: leaves; Wp: whole plant; Wpt: white petals.



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for barrenness. The Zulu used the root of *Clivia miniata* Regel. in treating febrile conditions and the herb to facilitate delivery at childbirth or to initiate parturition when its onset is retarded (Watt and Breyer-Brandwijk, 1962).

Crinum species have been used in different parts of the world to treat various disorders. The bulbs of *Crinum asiaticum* are used in India as tonics, laxatives and expectorants, and in urinary troubles. Its fresh roots cause nausea and vomiting; the seeds were applied for purgatives, diuretics and tonics, leaves were used as expectorant, against skin diseases and inflammation processes (Chopra *et al.*, 1956). In India, *Crinum latifolium* is applied to treat rheumatism, abscesses, earaches and as a tonic (Tram *et al.*, 2002a). *Crinum preense* Herb. (*Crinum longifolium*) is used in Indian popular medicine as a tonic, a laxative and in chest ailments (Ghosal *et al.*, 1981). *Crinum zeylanicum* L. is used in Sri Lanka to treat abscesses and fever; the bulbs are rubifacient in rheumatism and against snake bite; the juice of the leaves against earache. In Vietnamese folk medicine, *Crinum amabile* is used as an emetic, in rheumatism and earache (Tram *et al.*, 2002a). The roots of some *Crinum* species are used in Africa to treat urinary infections, coughs and colds, renal and hepatic conditions, sores (Watt and Breyer-Brandwijk, 1962), sexually transmitted diseases and backache, as well as to increase lactation in animal and human mothers. *Crinum kirki* Bak. is used in Kenya for the treatment of sores., In Tanzania, the fruit and inner part of the bulbs were applied as a purgative and the outer scales as a rat poison. *Crinum delagoense* Verdoorn is used in South Africa by Zulu and Xhosa traditional medicine. The Zulu, in particular, employed aqueous extracts to treat urinary tract infections and swelling of the body. *Crinum bulbispermum* Milne-Redhead et Schweikerdt has been used by Zulu, Sotho and Tswana people (South Africa) to treat rheumatism, aching joints, septic sores, varicose veins and kidney and bladder infections. *Crinum purpurascens* Herb. is used in Cameroon to treat sexual asthenia and spleen troubles (Tram *et al.*, 2002). In Madagascar, *Crinum defixum* Kerardren *et* Gawl., *Crinum firmifolium* Baker and *Crinum modestum* Baker, are used as an emetic, diaphoretic, emollient, in the treatment of abscesses, anthrax, and otitis. *Crinum firmifolium* is employed in external use for the treatment of various parasitic skin diseases (Tram *et al.*, 2002a). In Nigeria, the bulbs of *Crinum giganteum* have been reported to possess actions similar to that of *Digitalis*. Decoction of bulbs is used as a vermifuge, purgative and in urinary ailments, while roasted bulbs are used as rubefacient in rheumatism (Amos *et al.*, 2003).

Cyrtanthus species have been used to treat various diseases like scrofula, chronic coughs, headache, cystitis, leprosy and by black South African women during pregnancy and childbirth (Watt and Breyer-Brandwijk, 1962; Herrera *et al.*, 2001b). The bulb of *Haemanthus coccineus* L. has been early used as a diuretic in dropsis and as an asthma remedy. The fresh leaf was used as an antiseptic application to foul ulcers and anthrax pustules. Several species of *Haemanthus* (e.g. *Haemanthus multiflorus* Martyn., *Haemanthus natalensis* Pappé ex Hook. and *Haemanthus puniceus*) have been reported poisonous. *Hypoxis latifolia* Hook. is also reported to be very poisonous. A decoction of *Hypoxis nyasica* Bak. is a cough remedy. A lotion of *Hypoxis oblique* is used for septic wounds. A decoction of *Hypoxis rooperi* Moore is given as a tonic to weakly children and produces purgation (Watt and Breyer-Brandwijk, 1962). In Turkey, the herb of *Galanthus nivalis* subsp. *cilicicus* is reported to have cardiotoxic, stomachic and emmenagogue properties, whereas the poultice prepared from the fresh underground parts have external use in abscess maturation (Kaya and Gözler, 2005). The aqueous decoctions of the root tuber of *Hymenocallis tubiflora* are used for treating asthma (Seaforth *et al.*, 1998). The leaf of *Zephyranthes candida* Herb. has been used as a remedy for diabetes mellitus (Watt and Breyer-Brandwijk, 1962).