

FLAVONOIDS IN TEN *LIATRIS* SPECIES

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Plants and Sources *Liatris provincialis* Godfrey, collected by Dr R K Godfrey on 18 September 1971 in the vicinity of Tallahassee (Godfrey No 70895) *L pycnostachya* (Michx) Kuntze, collected by Dr B H Braun on 19 August 1959, in the vicinity of Kansas City, Missouri *L punctata* Hook, collected by Dr. Braun in August 1960, in the vicinity of Boulder, Colorado *L chapmanii* (T + G) Kuntze, collected by Dr Godfrey in October 1968, in the vicinity of Tallahassee *L secunda* (Ell) Small, collected by Dr. Godfrey in October 1958 *L graminifolia* (Walt) Kuntze (Lazor No 5585), collected by R Lazor on 22 September 1971, 12 km east of the junction of US 319 and State Road 155, Thomas County, Georgia *L gracilis* Pursh (Lazor No 5590), collected by Lazor on 25 September 1971, three miles east of the intersection of US 98 and Alligator Harbor Road, Franklin County, Florida *L spicata* (L) Kuntze (Godfrey No 70894), collected by Dr Godfrey on 18 September 1971, in the vicinity of Tallahassee *L tenuifolia* (Nutt) Kuntze (Lazor No 5587), collected by Lazor on 23 September 1971, three miles east of the junction of US 319 and State Road 155, Thomas County, Georgia *L elegans* (Walt) Kuntze, collected by Lazor (Lazor No 5586) 23 September 1971 on Sinkola Plantation, 6 km west of the intersection of US 319 and Georgia 155, Thomas Co, Georgia

Previous work 3-Glucoside, 3-rutinoside and 3-glucoside-7-rhamnoside of quercetin in *L spicata*,¹ thiophene from *L pycnostachya*,² liatrin from *L chapmanii*³

Present work Kaempferol-3,7-dirhamnoside (kaempferitrin), apigenin-6-xylosyl-8-glucoside (vicenin-1),⁴ apigenin-6,8-diglucoside (vicenin-2), quercetin-3-glucoside (isoquercitrin), quercetin-3-rutinoside (rutin), kaempferol, quercetin and in minute traces diglycosides of quercetin and isorhamnetin were isolated from the methanolic extracts of the aerial parts of the plants by the methods described earlier^{5,6} and identified by direct comparison with

¹ KAGAN, J (1968) *Phytochemistry* 7, 1205² ATKINSON, R E and CURTIS, R F (1971) *Phytochemistry* 10, 454³ KUPCHAN, S M, DAVIES, V H, FUJITA, T, COX, M R and BRYAN, R X (1971) *J Am Chem Soc* 93, 4916⁴ BOUILLANT, M L and CHOPIN, J (1971) *Compt Rend* 273, 1759⁵ WAGNER, H, IYENGAR, M A, HORHAMMER, L and HERZ, W (1971) *Phytochemistry* 10, 2824⁶ WAGNER, H, IYENGAR, M A, DULL, P and HERZ, W (1972) *Phytochemistry* 11, 1506

authentic material, cochromatography (TLC-3 solvents), IR and UV analysis. The results are tabulated below

TABLE 1 SURVEY OF FLAVONOIDS IN TEN *Liatris* SPECIES

Plant	Kaempferitrin	Flavonoids		Kaempferol	Quercetin
		Vicenin	Isoquercitrin		
<i>L. provincialis</i>	+	—	—	—	—
<i>L. pycnostachya</i>	+	—	+	+	—
<i>L. punctata</i>	+	—	—	+	—
<i>L. chapmanii</i> *	+	V-2	—	+	—
<i>L. secunda</i>	+	V-2	—	+	—
<i>L. graminifolia</i>	+	—	—	—	—
<i>L. gracilis</i>	—	V-2	Rutin	—	+
<i>L. spicata</i>	—	—	Rutin	—	—
<i>L. tenuifolia</i> *	+	V-1 + V-2	—	—	—
<i>L. elegans</i>	+	V-1 + V-2	—	—	—

* These were selected as typical examples for isolation

As can be seen from the above table, kaempferitrin is present in all species except in *L. gracilis* and *L. spicata*. Except for rutin and some flavonoid-like substances which were present only in traces in *L. spicata*, none of the compounds mentioned by Kagan¹ could be seen in our sample. It is also worth mentioning here that the occurrence of kaempferitrin in 8 *Liatris* species is the second report of kaempferitrin in Compositae, the first being the observation that it occurs in *Notonia grandiflora*.⁷ Vicenin-1 which has been found in 5 of the *Liatris* species is still not a commonly-occurring glycoside although it has been synthesized and its structure thoroughly established by Bouillant and Chopin.⁴

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⁷ RAO, D. V. and RAO, E. V. (1972) *Planta Med.* **22**, 205.

LONICEROSIDE (SECOLOGANIN) IN *CORNUS OFFICINALIS* AND *C. MAS*

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Plants *Cornus officinalis* Sieb. et Zucc. and *C. mas* L. (sect. *Macrocarpum* Spach).¹
Source Hørsholm Arboretum, Denmark. **Previous work on iridoid glucosides** In *C.*

¹ WANGERIN, W. (1910) in *Das Pflanzenreich* (Engler, A., ed.), Vol. IV, p. 229, Engelmann, Leipzig.