Quercetin-3-glucosid **(Zsoquercitrin).** Schmp. 221–222°, DC R_f (a) 0,22 (b) 0,70 (c) 0,73.

Kämpferol-3-glucosid (*Astragalin*). Schmp. 175–176°, DC R_f (a) 0,30 (b) 0,79 (c) 0,81 (nur in ***H.hoopesii).***

Quercetin-3-(O-acetyl)-β-D-glucopyranosid. Schmp. 167°, DC R_f (a) 0·37 (b) 0·74 (c) 0.73, UV: λ_{max} (MeOH) 358, 258; λ_{max} (NaOAc) 383, 273; λ_{max} ($NaOAc/H_3BO_3$) 372, 260; λ_{max} (NaOEt) 418, 273; λ_{max} ($AlCl_3$) 430, 275. IR: 1710 cm^{-1} (Estercarbonyl); 1640 cm^{-1} (Flavonol-Carbonyl). NMR: $(CD_3)_2SO + CF_3COOD$, TMS int., H-2', H-6' δ = 7,45–7,72 ppm (m) (2 Protonen); ***H-5'*** δ = 6,9 ppm (d), ***J*** = 9 Hz (1 Proton); H-8 S = 6,43 ppm (d), ***J*** = 2,5 Hz (1 Proton); H-6 δ = 6,22 ppm (d), ***J*** = 2,5 Hz (I Proton); CH-1 Glucose δ = 5,35–5,55 ppm (br); CH-2,3,4,5,6,6 Glucose δ = 3,2-4,3 ppm (6-7 Protonen); CH_3COO- δ = 2,57 ppm (s) (3 Protonen). Hydrolyse mit NaOMe 15 Min.: Quercetin-3-glucosid; Hydrolyse mit HCI (5 %) 1 Std. : Quercetin und Glucose.

Kämpferol-3-(O-acetyl)-glucosid: DC ***R,(a)*** 0,39 (b) 0,79 (c) 0,81, Hydrolysebedingungen wie oben).

Eine DC-Auftrennung von Quercetin-3-glucosid und Quercetin-3-(O-acetyI)-glucosid bzw. Kämpferol-3-glucosid und Kämpferol-3-(*O*-acetyl)-glucosid konnte nur auf Zellulose-Platten in 10 %iger Essigsäure erzielt werden.

Der Chloroformextrakt von *Helenium* ***hoopesii*** lieferte keine nennenswerte Sesquiterpenlaktonfraktion. Über die Inhaltsstoffe des Chloroformextraktes von *Plummera floribunda* berichten wir noch später.

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EUPHORBIACEAE

FLAVONOIDS OF SOME EUPHORBIACEOUS PLANTS

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Abstract-Vitexin and isovitexin have been isolated from the leaves of ***Jatropha curcas*** and ***J. heynii*** and ***Hevea brasiliensis***, while the leaves of ***Croton sparsiflorus*** and ***Manihot utilissima*** contain significant amounts of rutin.

IN RECENT years, there has been special interest in the comparative biochemistry of flavonoids.[1] Although many plants of the Euphorbiaceae (ca. 7500 species) have been studied for their triterpenoids and alkaloids, not much work has been recorded[2] on their flavonoids. In continuation of an earlier survey of flavonoids in South Indian plants,[3] we have systematically examined the leaves of some Euphorbiaceous plants recorded to be useful in the Indian indigenous system of medicine.[4] Our results are summarized in Table 1.

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[4] K. R. KIRTIKAR **and B. D. BASU,** ***Indian Medicinal*** *Plants*, Vol. ***3,*** pp. 2190-2290, Lalit Mohan Basu, India (1933).

The present isolation of C-glycosylflavonoids from two *Jatropha* species and *Hevea* is in agreement with earlier observations on their occurrence in this family.[5,6] It is significant that the leaves of *Manihot* (tapioca) commonly used as a fodder' for livestock in South India contains over 3 per cent of rutin. It may also be noted that we could not isolate the biflavonoid, heveaflavone earlier reported[8] from *H. brasiliensis;* instead, we have isolated vitexin and isovitexin.

TABLE 1. FLAVONOIDS OF THE EUPHORBIACEAE

Plant species	Part examined	Flavonoids identified
Jatropha heynii Balnom. Nov.	Leaves (dry)	Quercetin Quercetin 3-galactoside Vitexin* Isovitexin*
	Stem (dry)	Vitexin Isovitexin
J. curcas L. (= ***J. urens*** L.)		Apigenin Vitexin* Isovitexin
Hevea brasiliensis H.B.K.		Vitexin* Isovitexin*
Phyllanthus emblica L.	Leaves (fresh)	Ellagic acid* Kaempferol* Kaempferol 3-glucoside
Manihot utilissima Pohl. (= ***M. esculenta*** Crantz.)		Quercetin 3-rhamnosylglucoside*
Croton sparsiflorus Morong. (= C. ***bonplandianum*** Baill. Haines)		Quercetin 3-rhamnosylglucoside*
Croton oblongifolius Roxb.	Leaves (dry)	Quercetin* Isorhamnetin* Quercetin 3-galactoside

* Indicates isolation.

EXPERIMENTAL

The plant material was extracted with hot 80 % alcohol and the combined extracts concentrated ***in vacuo***. The aqueous concentrate was repeatedly shaken with petroleum b.p. 60–80°, ether and ethyl acetate in succession. The residues from the ether and ethyl acetate layers were studied by standard methods for flavonoids.[1] Whenever higher concentration of the glycoside was indicated in the ethyl acetate extract, the concentrate was either purified by preparative PC or crystallized. After recrystallization, the identity of the glycoside was confirmed by direct comparison with authentic pigments and acid hydrolysis to the aglucone and sugar. In the case of C-glycosides, hydrolytic fission with HI in phenol was carried out to identify the aglucone.

The leaves of ***Phyllanthus distichus*** Will. (= ***Cicca distica*** L.), ***P. niruri*** L., ***P. urinaria*** L., ***Acalypha indica*** L., ***A. wilkesiana*** Muell. Arg. and ***Cleistanthus collinus*** Benth. were practically free from any identifiable ilavonoid.

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