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FILICINAE

GYMNOGRAMMACEAE

FLAVONOLS FROM THE FRONDS OF *PITYROGRAMMA CHRYSOCONICA*

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Plant. Pityrogramma chrysoconica (Desv) Maxon ex Domin, 1928 *Occurrence* South America. *Previous work.* Dihydrochalcones from *P. chrysophylla*, var. *marginata*,[1] chalcones from *P chrysophylla* var *heyderi*,[2] flavonols from *Cheilanthes farinosa* [3,4]

Farina. Dried fronds were rinsed with cold acetone The solution was evaporated, the residue chromatographed on polyamide (benzene/increasing quantities of MeCOEt and MeOH)

Flavonols Galangin (3,5,7-trihydroxyflavone)-$C_{15}H_{10}O_5$, M^+, *m/e* 270, significant peaks at *m/e* 241, 213, 197, 179, 168, 153, 139, 121, 105 Orange–yellow spot on polyamide-layer in UV light, fluorescent after spraying with $ZrOCl_2$, UV max at 268, 360 (EtOH); 275, 416 ($AlCl_3$), identical to authentic specimen.

Izalpinin (3,5-dihydroxy-7-methoxyflavone)-$C_{16}H_{12}O_6$, M^+, *m/e* 284, significant peaks at 255, 241, 213, 197, 167, 151, 143, 123, 105. Yellow spot on polyamide-layer in UV light, fluorescent after spraying with $ZrOCl_2$, UV max at 268, 359 (EtOH), 277, 414 ($AlCl_3$) Identical to authentic specimen

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Key Word Index—*Pityrogramma chrysoconica*, Filicinae, flavones, galangin, izalpinin

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GYMNOSPERMAE

PINACEAE

ANTICOPALIC ACID IN *PINUS STROBUS* AND *P MONTICOLA*

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* Maintained in cooperation with the University of Wisconsin

Plant Pinus strobus L (Eastern white pine). *Uses* Timber Pulp *Source* West Virginia and several Wisconsin locations. *Previous work* Wood resin [1,2] Cortex oleoresin [2,3]

Needles Needle samples were cut into small pieces (> 1 cm) and extracted with Et_2O. The extract was methylated (CH_2N_2) and analysed by GLC using DEGS [4] The peak eluting at $r_{pim} = 1\ 45$ was collected, this peak can be either anticopalate, isopimarate, or a mixture of the two, since they have the same retention times [6] After passing the collected eluant through alumina in pentane and evaporation of the solvent, an IR spectrum (CCl_4) was obtained The amount of anticopalate present in the mixture can be estimated from the ratio of absorbance at 1730 cm^{-1} (C=O) absorbance at 1650–1640 cm^{-1} (C=C stretching) by a calibration curve This procedure showed that anticopalic acid comprises 61–96 per cent of the total resin acids.[5]

Cortex oleoresin No anticopalic acid was found [5]

Wood Shavings of sapwood from mature trees were extracted with Et_2O and the resulting extract methylated Anticopalic acid represented 14–19 per cent of the resin acids as analysed by the above procedure

Plant Pinus monticola Dougl (Western white pine) *Uses* Timber Pulp *Source.* Lolo National Forest, Montana *Previous work* Bark [6] Wood [6,7]

Needles No anticopalic acid was found [5]

Cortex oleoresin No anticopalic acid was found [5]

Wood Anticopalic acid was previously reported[6] as 55 per cent of the resin acids

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Key Word Index—Pinus strobus, Pinus monticola, Pinaceae, anticopalic acid, resin acids

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NEW *C*-METHYLFLAVANONES FROM DOUGLAS-FIR*

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