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WOOD ANATOMY OF *GOUANIA LUPULOIDES* (L.) URBAN

THE family Rhamnaceae according to Stebbins⁸ includes 60 genera and 900 species which are cosmopolitan in their distribution.

Gouania with its 32 species (Brizicky¹) is one of the genera included in the tribe, Gouanieae, of the family Rhamnaceae. Although woods of Rhamnaceae are not economically important, anatomically they show

certain interesting features such as 'flame-like' arrangement of the vessels in a growth ring, simple perforations, spiral thickenings of the vessel walls, alternate intervascular pitting with coalesced pit mouths, apotracheal and paratracheal parenchyma and heterogeneous and homogeneous rays. Very little work was done on the wood anatomy of Rhamnaceae (Solereider⁷, Record⁶, Metcalfe and Chalk⁴, Ghosh and Sashi², Panshin and DeZeeuw⁵, and McLean and Richardson³).

A detailed account of anatomical features of the wood of *Gouania lupuloides*, FPRL 24,220, collected from upper Matecube Key, is presented here.

Sections of the wood were cut at 20 μ m on jung microtome and stained permanent microperparations of T.S., T.L.S. and R.L.S. were prepared. Maceration of the wood was done by Schultz's method to study the individual elements. Fifty measurements were taken for each of the quantitative data (Table I).

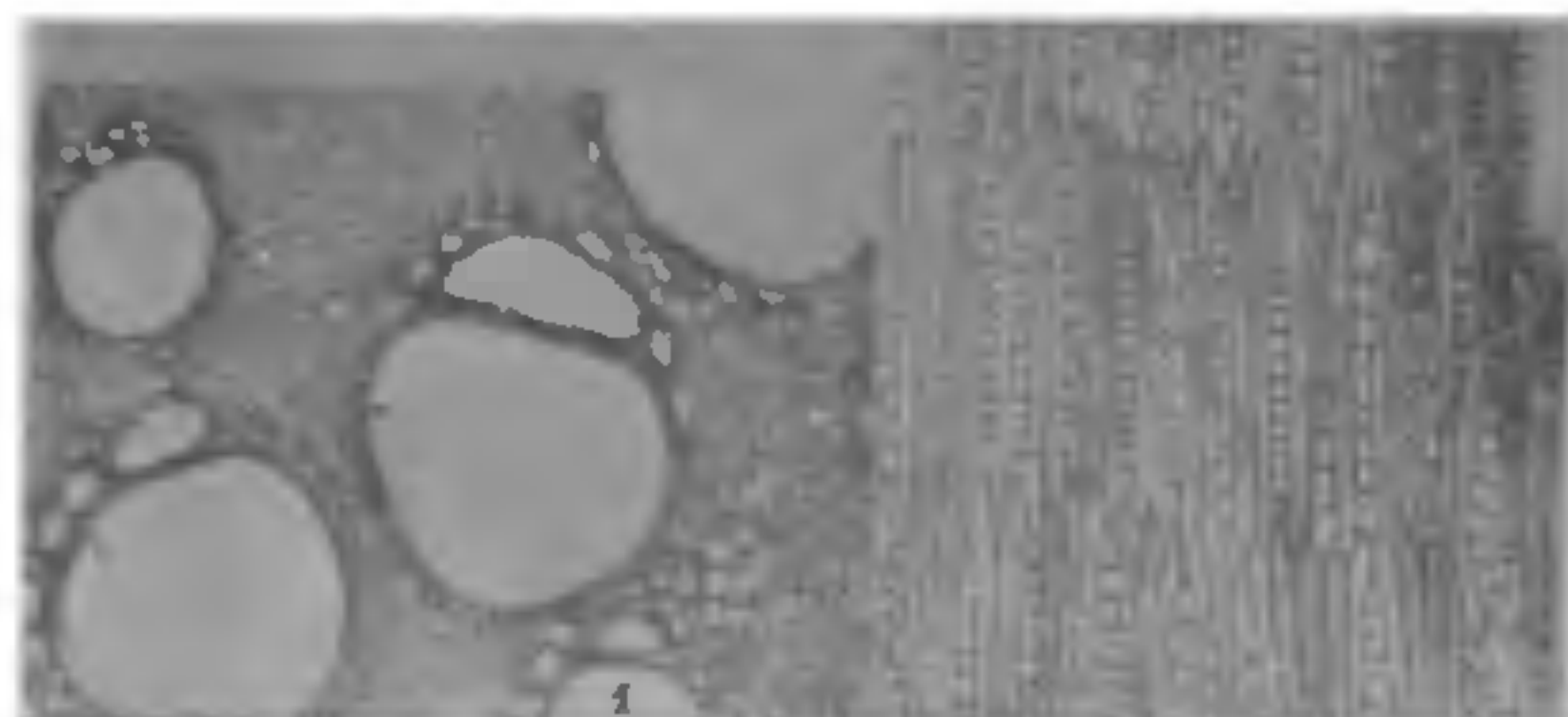
Wood is diffuse porous. Vessels are either solitary or in radial multiples of 2-3. They are mostly circular or oval in their shape (Fig. 1). The frequency of their occurrence per sq. mm ranges from 28-48. Tangential pore diameter ranges from medium to large. Perforations are simple and the angle of inclination of end wall is almost horizontal. Intervascular pitting is abundant, multiseriate, alternate and the pits are either oval or hexagonal in shape. Pit mouths are coalesced. Vessel-elements are short. Parenchyma is

TABLE I

Anatomical features of Gouania lupuloides

	Minimum	Maximum	Most frequent	Singles	Radial Multiples
1. Distribution of vessels/sq. mm	28	48	..		
2. Grouping of vessels (%)				39	61
3. Diameter of the vessel (μ m)	115	265	140-210		
4. Angle of inclination of end wall (degrees)	66	88	70-81		
5. Length of the vessel-elements (μ m)	100	300	180-216		
6. Length of the fibres (μ m)	720	1520	830-1260		
7. No. of rays/mm	14	24			
8. Height of the ray (μ m)					
Multiseriate	160	254			
Uniseriate	128	254			
9. Width of the ray (μ m)					
Multiseriate	18.5	37			
Uniseriate	7.5	18.5			

paratracheal vasicentric and aliform. Parenchyma cells are crystaliferous. Rays are sinuous and are mostly uniseriate with some bi- and triseriate ones. Ray conforms to heterogeneous II-A type. Rays are storeyed (Fig. 2). Ray-vessel pitting is similar to that of intervacular pitting. Both fibre tracheids and libriform fibres are present.



FIGS. 1-2. Fig. 1. T.S. showing vessels in singles and radial multiples of two, vasicentric parenchyma, thin walled fibres and sinuous rays $\times 1,600$. Fig. 2. T.L.S. showing storeyed heterogeneous rays, strand parenchyma with crystals $\times 1,600$.

The presence of storeyed rays in this genus is recorded for the first time in this investigation, although the wood of Rhamnaceae was studied by a number of earlier workers.

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EFFECT OF THIOACETAMIDE ON PUPARIATION OF HOUSEFLY

PUPARIUM formation or pupariation is a critical and hormonal dependent process in the development of cyclorrhaphous flies^{1, 2, 3, 4}. Pupariation consists of distinct morphological events such as: (i) retraction of anterior segments, (ii) contraction of subcuticular musculature and longitudinal shortening of the body, (iii) cuticular shrinkage to form a smooth surface and (iv) tanning⁵. Metabolic inhibitors of known cellular functions have been of great help to understand this process^{1, 2, 3}. In this report we show that thioacetamide, an inhibitor of RNA transport from nucleus to cytoplasm⁶, inhibits differentially only some of the events of pupariation.

Strain of housefly used in the present study *Musca domestica* nebulosa Fabr. has been maintained in our laboratory at $31 \pm 1^\circ\text{C}$. Techniques for rearing the flies, collection and incubation of eggs have been the same as described earlier⁸. Desired concentrations of thioacetamide were prepared in milk and 50 larvae, 38 hr old, were transferred to 250 ml beaker containing thioacetamide-milk soaked cotton pads. Suitable control was kept and three replicates were prepared for each treatment. The experiments were carried out at $35 \pm 1^\circ\text{C}$ as this temperature supports maximum rate of development of the larvae⁷. Larvae were checked at regular intervals and the number of pupae was noted by counting the white barrel-shaped structures in which tanning has set in. Only tanning was scored as an index of pupariation in the thioacetamide-treated larvae. The length of the puparia was measured as mentioned earlier⁸. Pupariation delay was determined graphically from hours after treatment versus the percentage puparia formed by comparing the time taken for 50% pupariation in control as well as treated larvae.

Under our experimental conditions, 75 hr old control larvae start showing the morphological processes associated with pupariation. Thioacetamide delays pupariation in a dose-dependent manner (Table I)

TABLE I
Effect of thioacetamide on pupariation

Concentration (%)	Pupariation* delay (Hours)	Length of the puparia** (mm)
0	..	6.07 ± 0.05
0.05	6	8.4 ± 1.10
0.1	10	9.1 ± 1.60
0.2	17	9.1 ± 1.60

* Each value is based upon three replicates of 50 larvae each.

** Each value represents the mean of 30-50 pupae with the standard error (S.E.) of the mean.