

Notas & Comunicações

○ *Anopheles darlingi* evita o DDT numa área de malária resistente a drogas

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Observações preliminares sobre a biologia do *Anopheles darlingi*, indicaram que esta espécie pousa em vegetações nos arredores de residências mas, entretanto, entram nas mesmas para alimentarem-se. Após estarem alimentados, estes mosquitos, saem sem contudo pousarem em superfícies pulverizadas com DDT. Esta espécie entra também em casas não pulverizadas e, nessas, pousa tanto nas paredes de dentro como nas de fora.

Foi estabelecida uma estação de campo permanente no Km 153-BR-174, ao norte de Manaus, para permitir a continuação dos es-

tudos em malária. Como todas as residências da área de estudo são construídas a fim de permitir a circulação de ar, os mosquitos penetram facilmente nas mesmas por frestas, fendas das tábuas, buracos e janelas abertas.

A permanência do *Anopheles darlingi* nos arredores das residências já foi publicado (1), mas este é o primeiro relato de como este mosquito evita o DDT numa área que, além disto, tem *Plasmodium* resistente a cloroquina (2) no Amazonas. O próximo passo será o de avaliar qual o mecanismo genético envolvido na seleção desse comportamento.

(1) — Cf. Bustamante, F. M.; Pinto, O. S.; Guedes, A. S.; Xavier, S. H. & Freitas, J. R. — Sobre a captura do *Anopheles darlingi* e do *Anopheles albitasis* nas paredes externas de casas dedetizadas em Engenheiro Dola-bela, Minas Gerais. *Rev. Bras. Malariol. D. Tropicais*, 3(1): 122-129. 1951.

(2) — Ferraroni, J. J. & Waki, S. — Resistência do *Plasmodium* às cloroquinas no Estado do Amazonas, detectada pelo método *in vitro*. *Acta Amazônica*, 7(1): 147-148. 1977.

The Chemistry of Brazilian Guttiferae. XXXVI. Constituents of amazonian species

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In continuation of a series of reports on the chemical composition of Guttiferae, belonging predominantly to the genus *Kielmeyera* from central Brazil (Castelão Jr. *et. al.*, 1977), we examined the following species from the Amazon region.

Caraipa costata Spruce ex Benth.

A trunk wood sample from the vicinity of Manaus was freed from bark, ground and extracted with benzene. The extract (8%, 41g) was chromatographed on a silica column, giving successively the following useful fractions with the indicated solvents: A₁ and

A₂ (benzene-EtOH 98:2), A₃ and A₄ (benzene-EtOH 96:4), A₅ and A₆ (benzene-EtOH 94:6). A₁ was rechromatographed on florasil giving a red band which, extruded and extracted with CHCl₃, gave physcion (1,8-dihydroxy-6-methoxy-3-methylanthraquinone, 5 mg), m.p. and lit. [Eder & Hauser, 1925] m.p. 205-207°. A₂ was freed from oil by chromatography on silica giving lichexanthone (1-hydroxy-3,6-dimethoxy-8-methylxanthone, 6 mg) m.p. and lit. [Roberts, 1961] m.p. 186-187°. A₃ was chromatographed on a dry silica column giving aliphatic ester (70 mg), lichexanthone (5 mg) and lupenone (50 mg).

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***Caraipa grandifolia* Mart.**

Previous work on this species revealed the presence of sitosterol, lupeol, lupenone, betulinic acid and vanillin [Lima *et al.*, 1972]. The present work concerned again a trunk wood sample from the estuary of the Amazon river. This was ground and extracted with benzene. The extract (5%, 18g) was chromatographed on silica. The benzene-EtOH 97:3 eluate was dissolved in hot EtOH. Upon cooling to 0° betulinic acid (3 g) precipitated and was removed by filtration. The solvent was evaporated and the residue, in Et₂O, extracted successively with aq. Na₂CO₃ and NaOH. The Na₂CO₃ solubles were precipitated with HCl and filtered through silica to give 4-hydroxy-2,3-dimethoxyxanthone (6 mg), m.p. and lit. [Gottlieb *et al.*, 1966] m.p. 218-219°. The NaOH solubles were precipitated with HCl and crystallized from EtOH to give cadensin-A (2 mg) [Castelão Jr. *et al.*, 1977]. In the mother liquor 1,5-dihydroxy-6,7-dimethoxyxanthone [Lima *et al.*, 1972] was detected by TLC. The neutral fraction was crystallized from EtOH giving betulin (300 mg).

***Caraipa psidifolia* Ducke**

The benzene extract of a trunk wood sample from the IPEAN Forest Reserve, Belém, IPEAN N.º 184-40-53, wood collection U. of Brasília N.º 63, examined by TLC, was shown to contain sitosterol, lupeol, 2-methoxyxanthone [Pimenta *et al.*, 1964] and 1,5-dihydroxy-6,7-dimethoxyxanthone.

***Caraipa valioi* Paula [Paula, 1970, 1976]**

A trunk wood sample from the Ducke Forest Reserve, Manaus, was extracted with light petroleum. The extract, examined by preparative TLC, was shown to contain sitosterol, lupeol, betulinic acid, aliphatic ester, 1,5-dihydroxy-6,7-dimethoxyxanthone and cadensin-A.

***Haploclathra verticillata* Ducke**

A trunk wood sample from Amazonas State, voucher Herbarium RB 29035, was extracted with benzene. The extract, examined by silica TLC, was shown to contain sitosterol, lupeol, betulinic acid, 1,7-dihydroxyxanthone

and 1-hydroxy-7-methoxyxanthone [Gottlieb & Stefani, 1970].

***Mahurea tomentosa* Ducke**

A trunk wood sample from Amazonas State, voucher RB 23779, was extracted with benzene. The extract, fractionated by preparative silica TLC, gave sitosterol, 1,7-dihydroxyxanthone and 1-hydroxy-7-methoxyxanthone.

***Platonia insignis* Mart.**

A trunk wood sample of "bacurí", from the vicinity of Manaus, was extracted with ethanol. The extract yielded by crystallization 1,7-dihydroxyxanthone (euxanthone), first isolated from this source by Spoelstra and van Royen, 1929. The mother liquor was extracted with aqueous borax. The product obtained by acidification of the aqueous solution was fractionally crystallized from methanol to give successively a 1,6-dihydroxy-7-O-glycosylxanthone, yellow crystals, 300° dec., and 1,6,7-trihydroxyxanthone, m.p. and m.m.p. with an authentic sample, contributed by Dr. F. Scheinmann, 278-280° [Carpenter *et al.*, 1969]. The heteroside was cleaved by acid hydrolysis into an unidentified sugar and 1,6,7-trihydroxyxanthone. The location of the glycosyl was established by UV (shifts of maxima occurred upon addition of AlCl₃+HCl and NaOAc).

COMMENTS

The genera *Caraipa* and *Kielmeyera* belong to different tribes of the subfamily Kielmeyeroideae [Melchior, 1964]. The structural similarity of their xanthenes is, thus, not surprising. A chemical difference indicated by the present work refers to the relative quantity of xanthone (which predominate in *Kielmeyera*) vs. triterpenoids of the lupane class (which predominate in *Caraipa*).

The presence of lichexanthone and physcion in *C. costata* seems to indicate the co-extraction of a lichen. It should be noted, however, that the analysed wood sample was freed from bark prior to extraction.

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The Chemistry of Brazilian Quiinaceae.

I. Constituents of *Touroulia guianensis* and *Lacunaria jenmani*

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The small family Quiinaceae includes 4 genera (*Froesia*, *Lacunaria*, *Quiina* and *Touroulia*) with 37 central and south american species. Although generally included in the subclass Dilleniidae, order Theales [Cronquist, 1968], and considered derived from the Ochnaceae or the Theaceae, the family has even been placed in the subclass Rosidae, order Linales, and considered derived from the Linaceae [Hegnauer, 1968]. It was hoped that chemical data, lacking at present time, may help to clarify the presently uncertain systematic position.

The analysis of trunk wood of *Touroulia guianensis* Aubl. revealed the presence of 2,6-dimethoxy-p-benzoquinone [Corrêa *et al.*, 1970], friedelan-3 α -ol and friedelin [Drake & Campbell, 1936], sitosterol and β -sitostenone [Lavie & Kaye, 1963], and syringaresinol [Weinges, 1961]. Friedelin, sitosterol and syringaresinol were also isolated from the trunk wood of *Lacunaria jenmani* Ducke.

While, thus, both genera appear to be close chemical relatives, the analysis fails to indicate affinities of the family, since the isolated constituents are of widespread occurrence in the plant kingdom.

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