

50% petroleum ether. This was identified as vindoline (30 mg) by chromatographic and spectroscopic comparison with an authentic sample (14).

Fraction (F₇) (6 g) was chromatographed on a silica column (200 g) and eluted with increasing polarities of petroleum ether, EtOAc, and MeOH. The eluates of 70% EtOAc-30% MeOH (200 ml) was concentrated and purified by preparative tlc on silica plates in 60% Me₂CO-40% petroleum ether to afford an alkaloid (18 mg) which was identified as vinblastine.

Comparison of the spectral data with those reported in the literature (15, 16) for vinblastine as well as chromatographic comparison with an authentic sample of vinblastine isolated from *C. roseus* leaves in several solvent systems confirmed the identity of the binary compound as vinblastine.

Another band faster moving to vinblastine isolated from the same plates afforded a new alkaloid that had a mass spectrum virtually identical to that of vincristine. Direct tlc comparison with an authentic sample of vincristine, however, showed that the isolated compound was faster running to vincristine in 60% Me₂CO-40% petroleum ether, the two being distinctly separable on mixed tlc. Further work on the new compound, which appears to be isomeric to vincristine, is continuing.

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HORDENINE AND N-METHYL-4-METHOXYPHENETHYLAMINE FROM *ERIOGONUM* SPECIES

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A screening program (1) found several *Eriogonum* species (Polygonaceae, Buckwheat family) to contain alkaloids. Because this was the first report of alkaloids in the genus *Eriogonum*, we have identified the major alkaloidal components in four species.

Species	Plant Part	Alkaloids Found
<i>E. alatum</i> Torr.	roots	hordenine
	above ground	none
<i>E. annuum</i> Nutt.	whole plant	hordenine, N-methyl-4-methoxyphenethylamine
<i>E. campanulatum</i> Nutt.	roots	hordenine
	above ground	hordenine, N-methyl-4-methoxyphenethylamine
<i>E. inflatum</i> Torr. & Frem.	whole plant	hordenine

hordenine was identified by comparison (uv, pmr, tlc) with a commercial and a previously isolated sample (2), while *N*-methyl-4-methoxyphenethylamine was identified by comparison with an authentic sample synthesized (3) from commercial *O*-methyltyramine (uv, pmr, ms, tlc).

The alkaloid-containing species are spread over several of the subgenera (4) in this very complex genus. Those species that do not contain alkaloids (1) are all members of subgenus *Flava*, and hence, lack of alkaloids may be of value in the chemosystematics of *Eriogonum*.

Full details of the isolation and identification of the compounds are available on request to the senior author.

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A TERPENEHYDROQUINONE FROM THE MARINE ASCIDIAN *APLIDIUM CONSTELLATUM*¹

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Terpene hydroquinones have been isolated from a broad spectrum of marine organisms including algae (1-3), ascidians (4,5), octocorals (6), and sponges (7,8). Pharmacologically, these compounds demonstrate activity as anticancer agents providing protection from leukemia and tumor development in test animals (5) and drastically reducing the mutagenic effects of the carcinogens benzo(a)-pyrene and aflatoxin B₁ (4). In our search for compounds of potential pharmacological or agricultural interest, we isolated a terpene hydroquinone derivative, 2-methyl-2-(4-methylpent-3-enyl)-2H-chromen-6-ol from the colonial tunicate *Aplidium constellatum* Verrill. The organism was collected in Georgia coastal waters and was authenticated with the help of the Georgia Department of Natural Resources, Brunswick, Georgia (9). A voucher specimen on deposit at the Skidaway Institute of Oceanography.

The structure was deduced from uv, nmr, and mass spectral data. This compound has previously been reported from the native tropical American tree *Cordia alliodora* Ruiz. and Pav. (Boraginaceae) whose wood is recognized for its durability in marine uses (10). Other chromenols chemically related to 2-methyl-2-(4-methylpent-3-enyl)-2H-chromen-6-ol have been isolated from terrestrial sources (11, 12). The terrestrial compounds have antiallotropic activity and are thought to function in chemical defense. Their role in marine organisms is not known. Full details of the isolation and identification of 2-methyl-2-(4-methylpent-3-enyl)-2H-chromen-6-ol from *A. constellatum* are available upon request.

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