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CYTOTOXIC BRUCEOLIDES FROM BRUCEA JAVANICA

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Bitter substances known as quassinoids are obtained from a number of genera (e.g. Quassia) in the mainly pantropical family Simaroubaceae. The genus Brucea, which has four species in Africa and two species in Asia (Nooteboom, 1962) contains a type of quassinoid which is based on the parent pentacyclic alcohol bruceolide. The bruceolides are a series of esters which differ from each other by the nature of their esterifying acids. A number of bruceolides, including bruceantin and bruceantinol isolated from B. antidysenterica, have significant inhibitory activities against experimental tumour systems such as the in vitro 9-KB system and the in vivo P 388 leukemia (Kupchan et al 1973 and 1975).

In view of the widespread distribution of Brucea species and the possible existence of different chemical strains, B. javanica (L.) Merr. (syn. B. amarissima Desv. ex Gomes, B. sumatrana Roxb.) obtained from Fiji has been re-investigated for bruceolides. A cytotoxicity test using TLX-5 mice lymphoma cells has been developed for evaluating plant extracts, and has been applied as an aid to the separation of the bruceolides (Phillipson and Darwish, 1979). The major bruceolide of the roots and fruits was identified as bruceine A (characterized by PMR and MS) and was shown to have an ID_{50} of 0.031µg 1ml in the TLX-5 mouse lymphoma test. The novel bruceolide, dehydrobruceine A was also isolated and its structure, which was deduced from its PMR and MS properties, was confirmed by conversion of bruceine A to dehydrobruceine A. The natural product proved to be identical (TLC, MS) with the prepared compound. Bruceantin and bruceantarin, which have not previously been reported from B. javanica, were also isolated together with bruceine B, bruceine C and dehydrobruceine B which have been previously reported from this plant (Polonsky, 1973).

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