Tropical Bryology 6: 193-202, 1992

Systematic screening of bryophytes for antitumor agents

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Abstract. References are made to cytotoxic and/or antitumor compounds that have been isolated - ansamitocin P-3 from *Claopodium crispifolium* (Hook.) Ren. & Card. and *Anomodon attenuatus* Hueb., or an associated actinomycete, and ohioensins and pallidisetums from *Polytrichum* spp. Several hundred collections, which have been obtained from temperate regions of North America during 1990 and 1991, are currently being screened in new bioassays; active sesquiterpene lactones have been recently isolated from species of *Porella*. The methodologies of collecting and screening bryophyte samples are discussed with consideration to costs based on expected number of samples that might be collected in a day, the diversity in the collections as related to phytogeography and vegetation types, and the bryophyte cover that is vanishing in many forest regions of the United States. The difficulties in obtaining large collections for isolation of active agents are also discussed by example-recollection of *Claopodium crispifolium*.

Introduction

Plants, animals, fungi and microbes possess a wide variety of chemical defensive and/or offensive mechanisms as part of their survival strategy; thus, it is not too surprising to learn that nearly half of all medical prescriptions contain ingredients derived from natural sources of which 20-25% are of plant origin (Marderosian & Liberti 1988; Simpson & Conncer-Ogorzaly 1986). Taxol, isolated from the stembark of a conifer, *Taxus brevifolia*, has recently been recognized as a useful compound for treating ovarian and mammarian cancers (Kingston 1991; Rowinsky *et al.* 1990). However, it is estimated that less than 3% of the plants or animals have been thoroughly evaluated by pharmaceutical industries, and there has only been a preliminary screening of bryophytes for biological activities (Spjut *et al.* 1986, Asakawa 1990).