

O-15: BIOCATALYTIC AND SEMISYNTHETIC STUDIES OF ANTICANCER TOBACCO CEMBRANOIDS

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Cancer remains one of the major global causes of death. The ultimate goal of this study is to optimize prototype antiproliferative and antiangiogenic tobacco cembranoids. Leaf and flower cuticular wax of *Nicotiana tabacum* contain high amounts of cembranoid diterpenes, which are key flavor ingredients. Tobacco cembranoids α - and β -2,7,11-cembratriene-4,6-diols (**1** and **2**) have been reported to inhibit phorbol ester-induced tumorigenesis in mice. The objectives of this study were: 1) to isolate adequate amounts of the major cembranoid diols; 2) to biocatalytically and chemically optimize these cembranoids; and 3) to evaluate the anticancer activities of the resulting products. Cembranoid diols were isolated and subjected to biocatalytic and semisynthetic studies, which generated new diverse derivatives with enhanced anticancer activity. Tobacco diols showed antiproliferative and cytostatic activities against malignant +SA mammary epithelial and L5178Y mouse lymphoma cells. In conclusion, tobacco cembranoids are potential targets that can be developed as anticancer agents.

	R1	R2	
(1S, 2E,4S,6R,7E,11E)- 2,7,11-	α -OH	β -CH ₃	Cembratriene-4,6-diol (1)
(1S, 2E,4R,6R,7E,11E)- 2,7,11-	β -OH	α -CH ₃	Cembratriene-4,6-diol (2)

