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Isolation of ent-labdane diterpenes from Gymnosperma glutinosum (Spreng.) Less

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Objectives: The aim of this work is to isolate bioactive substances from the medicinal plant *G. glutinosum* for further studies as antitumor agents. This plant is distributed from Central America to the South of the United States of America and in the scientific literature are different ethnobotanical reports about its biological activity.

Materials & Methods: Dry and grind material from the aerial parts of the plant collected in the South of the city of Monterrey (Mexico) was subjected to a Soxhlet extraction with hexane. After removal of the solvent in an evaporator, the obtained extract showed excellent cytotoxic activity against the murine lymphoma L5178Y-R.

Results: Fractionation of the hexane extract of *G. glutinosum* by adsorption column chromatography (silica gel, normal and reverse phase) and size exclusion chromatography (Sephadex) showed *ent*-labdane diterpenes 1, 2 and 3 as mainly responsible for the observed cytotoxic activity of this plant against the lymphoma murine L5178Y-R. The purity of compounds was monitored using silica gel thin-layer chromatography. The identification of the compounds was carried out by IR, MS, 1H-NMR, 13C-NMR and 2D-NMR.

Conclusions: The very similar structure of the diterpenes present in *G. glutinosum* (Fig. 1) hinders the separation of themselves with a single chromatographic technique, so the combined use of three different techniques of chromatography column is fundamental to achieve separation and purification. Also, the monitoring of the purity by thin layer chromatography requires several different techniques (UV light, iodine vapors, chemical reagents) as shown in figure 1.



Figure 1: Thin layer chromatography of *ent*-labdane diterpenes isolated from *G. glutinosum*.

Biography

Ramiro Quintanilla-Licea has done his BSc degree in Industrial Chemistry (1977) and a Master's degree in Organic Chemistry (1979), from the Universidad Autónoma de Nuevo León (Mexico). He did his PhD in Organic Chemistry from the University of Frankfurt am Main, German Federal Republic (1988). He is currently involved in the investigation of Mexican plants with anticancer, antiprotozoal and anti-diabetic activity, in collaboration with scientists from the UANL and different universities in Germany and the Japan.

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