

## ABSTRACT

The jojoba plant, *Simmondsia chinensis* (link) Schneider, is a semi-arid evergreen shrub. It grew wild in the desert south-western United States and north-western Mexico. Now it is cultivated in other countries, such as, Argentina, Peru and Morocco. The jojoba seed contains about 50% of liquid wax which is composed mainly of straight chain monoesters. This oil has good markets in cosmetics and lubricants. The rest of seed, a protein rich meal (32%) can be used as animal feed. Unfortunately, this meal contains approximately 15% of group of toxic glycosides. The simmondsin has been identified as the most responsible food intake inhibition to rodents and chickens.

Approximately all simmondsin and oil can be easily removed in one step by repeated extraction with water at 90°C from ground jojoba seeds. The optimum time and temperature of extraction were respectively 1.5 h and 90°C. Quantitative analysis of simmondsin was made by HPLC method using adenosine as internal standard.

Detoxification procedures by chemical, microbiological, and solvent extraction methods were reported by several authors. Here we report a successful detoxification of jojoba meal using enzymes. We established reaction conditions that yielded new meal which has the same nutritional qualities in proteins as the original meal. The enzymatic reaction gives rise to one major compound to which the structure of an amide was assigned on the basis of IR, <sup>1</sup>H and <sup>13</sup>C NMR spectra. The effect of the resulting jojoba meal on the food intake in rats was checked. In contrast, the detoxified meal containing the amide derivatives shows no toxicological activity. Indeed, rats receiving oral administration of the obtained meal show normal growth. Thus, it is expected that this meal could be used as an animal feed ingredient.

Also, the simmondsin exhibited significant biological activities. It shows an anorexic activity important, indeed rats receiving oral administration of aqueous solution of simmondsin (2ml, 25g/l) died following 10 days of treatment. Also an anti-mitotic activity in *Lepidum sativum* L was observed when compared to both lycorin and colchicines. It is also worth of note the simmondsin show no antitumour activity and no antifungal. And lastly the simmondsin were no toxic for larvae of *Artémia salina* (Brine Shrimp test) with LC<sub>50</sub> value of 757 µg/ml.

**Key words:** simmondsin; jojoba; quantification; food intake; enzymatic detoxification; endogenous enzymes; simmondsin amide; anorexia, anti-mitotic; anti-tumour.