



ANTIOXIDANT AND ANTITUMORAL ACTIVITY OF PROTEIN FRACTIONS FROM *Bixa orellana* L., SEEDS

Luis J Coronado-Cáceres^{1,2}, Renata Rivera-Madrid¹, Ana M. Puebla-Pérez³, Margarita Aguilar-Espinosa¹, Juan C. Mateos-Díaz², Eugenia Lugo-Cervantes².

¹Centro de Investigación Científica de Yucatán A.C., C.P. 97200.

²Centro de Investigación y Asistencia en Tecnología y Diseño del Estado de Jalisco, A.C., 44270

³Universidad de Guadalajara. C.P. 44430

luis.coronado@cicy.mx.

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Introduction. Bioactive peptides and proteins with different biological functions has been studied in the last decades, and it has found antihypertensive hypocholesterolemic, immunomodulatory, antimicrobial, antioxidant activity and its potential utility as anticancer and antitumoral. There are many sources of proteins and peptides like milk and seeds, in the case of seeds, soya, *Theobroma cacao*¹, *Amaranthus hypochondriacus*² have been studied. In soya and *Amaranthus* have been found lunasin a peptide with activity cytotoxic. *Bixa orellana* L., seeds contain 17% protein and are consumed whole milled in the traditional diet in Mexico, therefore they might represent source of bioactive peptides and proteins with different properties, such as reduce the damage caused by free radicals and/or preventing cancer. The aim of this work was evaluate the antioxidant and antitumoral activity of protein fraction from *B. orellana*, seeds.

Methods. Extraction of storage protein was realized by Osborne method. Each fraction was lyophilized. The activity antioxidant was evaluated by ABTS³ and ORAC⁴ methods. The antitumoral activity was evaluated in BALB / C mice using L5178Y lymphoma model⁵.

Results. The antioxidant activity was determined in albumins, globulins, glutelins using glutathione like reference. Albumin fraction showed antioxidant activity measured by ORAC-FL method but by ABTS method glutelin fraction showed antioxidant activity. According to several authors, the ORAC method is more reliable because it reflects more closely to a biological system (Fig. 1). Antitumoral activity was evaluated in mice inoculated with lymphoma, which was supplied each protein fraction in different groups and It found that the fraction of globulins showed antitumoral activity, following by glutelins and albumins (Table 1).

Table1. Effect of protein fractions from *B. orellana* seeds on ascitic fluid and viable cell counts of tumor cells in Balb / C L5178Y lymphoma.

Group	ascitic fluid (ml)	Cell Density (x10 ⁶ cells / ml)
Control L5178Y	4.2 ±1.224	201.25 ±60.878
albumins + L5178Y	4.133 ±0.55	192 ±90.796
globulins T + L5178Y	3.77 ±1.392	155.6 ±71.779
Glutelins + L5178Y	3.76 ±0.99	178.8 ±61.067

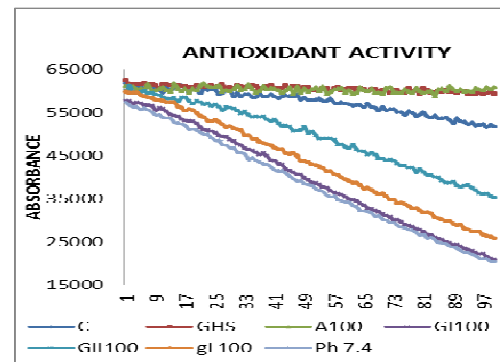


Figure1. Antioxidant activity of protein fractions *B. orellana* seeds.

Conclusions. The results demonstrated that the protein fractions of *Bixa orellana* showed antioxidant and antitumoral activity. Albumins presented antioxidant activity and globulins antitumoral activity. Between two activities there are not correlations.

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