

The Antiproliferative Effect of Soy (*Glycine max*) Isoflavones Contained in a Nutraceutical on Cancer Cell Lines

Maura Cárdenas-García^{1, *}, Diana Jiménez-Hernández¹, María Guadalupe Hernández-Linares², Marcela Lucía Guerrero-Africani¹, Lilia Karina Cabrera-Cosme^{1, 3}

¹ Lab. Fisiología Celular, Facultad de Medicina, BUAP, Puebla 72420, México;

² Lab. del Jardín Botánico, Instituto de Ciencias BUAP, Puebla 72420, México;

³ Queen's University Belfast, Belfast, United Kingdom

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Correspondence: Address correspondence to this author at the Lab. Fisiología Celular, Facultad de Medicina, Benemerita Universidad Autonoma de Puebla, Puebla, Calle 13 Sur 2702, Los Volcanes, 72420, Mexico; Tel: +2222600689; E-mail: maura.cardenasgarcia@viep.com.mx

Background: Cancer is a homogenous group of diseases characterized by the dysregulation of normal cell physiological processes, such as proliferation, growth, and migration. In Mexico, cancer accounts for one of the main causes of death. Among the most common types of cancer which affect the Mexican population are breast, cervical, and colon cancers.

Objective: In the current research, we studied the effects of phenolic compounds of soy (*Glycine max*), isoflavones, available as a nutraceutical commercial product, on the proliferation of several cancer cell lines.

Methods: Firstly, we carried out a series of experiments of simulated chemical digestion to later determine the integrity and functionality of active compounds present in commercial capsule products after their chemical digestion. Later on, we performed thin-layer chromatography, ultraviolet/visible spectrophotometry, and

analysis of the antioxidant activity of the phenolic compounds. We also assessed the effects on the proliferation of several cancer cell lines.

Results: By using such techniques, we demonstrated that soy isoflavones maintained their integrity and activity, even after being chemically digested. Moreover, our results showed several cases in which soy isoflavones did exert a noticeable effect on cell proliferation. Though the IC₅₀ doses were different for each cell line, cell proliferation was, in fact, lower in all of them.

Conclusion: Our research provides strong evidence of the compelling antiproliferative effect of soy isoflavones in the commercial product, even after simulated digestion, in distinct types of cancer. Hence, this represents a breakthrough to continue investigating phenolic compounds as potential coadjutants for anti-neoplastic treatments.

Keywords: Nutraceutical soy isoflavones, simulated digestion, microwave-assisted extraction, breast, colon, cervix hepatic adenocarcinoma, cancer cell lines.