

6th International Workshop on Immunonutrition, 15th–17th October 2012, Palma de Mallorca

***In vitro* effect of pine bark extract added to fruit juices on gutinflammation after gastrointestinal digestion**

C. Frontela-Saseta, R. López-Nicolás, C. A. González-Bermúdez, P. Peso-Echarri,
L. Fernández-Palacios, C. Martínez-Graciá and G. Ros-Berruezo

Department of Food Science and Nutrition, Faculty of Veterinary Sciences, Regional Campus of International Excellence “Campus Mare Nostrum”, Murcia, Spain

Inflammation is a non-specific response of mammalian tissues to a variety of hostile agents and helps to restore homeostasis at infected or damaged sites⁽¹⁾. When this inflammatory response is not well regulated at intestinal level, a dysfunction characterized by overproduction of a wide spectrum of pro-inflammatory cytokines and others mediators of inflammation appears. Current anti-inflammatory treatments comprise different drugs that are frequently associated with undesirable side effects⁽²⁾. Consequently, in this research we try to study in depth the effect of dietary factors with antioxidant activity, specifically fruit juices enriched with pine bark extract (PBE) subjected to an *in vitro* gastrointestinal process⁽³⁾, on inflammatory intestinal process. PBE consists of a concentrate of water-soluble polyphenols and it has been demonstrated to have strong antioxidant properties.

Differentiated Caco-2 cells were used for experiment. In inflammatory conditions, two digested juices, with and without added PBE, were tested to know their anti-inflammatory effects. Trans Epithelial Electric Resistance (TEER) and levels of IL-8 and nitric oxide (NO) produced by cells were measured as indicator of inflammation level.

The results showed an important decrease in TEER when inflammation is induced, indicating a disorganization of differentiated epithelium. This effect was suppressed when digested pineapple juice enriched with PBE and digested red fruit juice, with or without PBE, was added to differentiate Caco-2 cells. Regarding IL-8 and NO levels, cells exposed to red fruit juice enriched with PBE, after digestion, showed the lowest level of both inflammatory markers; meanwhile non-enriched pineapple juice seems to have the lowest anti-inflammatory effect.

The main conclusions are that the addition of digested fruit juices added with PBE, has a significant *in vitro* anti-inflammatory activity; digested red fruit juice, possess a high anti-inflammatory effect, that increases when PBE is added, showing similar values of TEER, IL-8 and NO than in non-inflamed cells.

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