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

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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<sup>(1)</sup>. 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<sup>(2)</sup>. 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<sup>(3)</sup>, 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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2. Waldner MJ & Neurath MF (2010) *Curr Opin Pharmacol* **9**, 702–707.
3. Frontela C, Ros G, Martínez C *et al.* (2011) *J SciFoodAgric* **91**, 286–292.