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Sweet cherry extracts as natural potential anticancer agents

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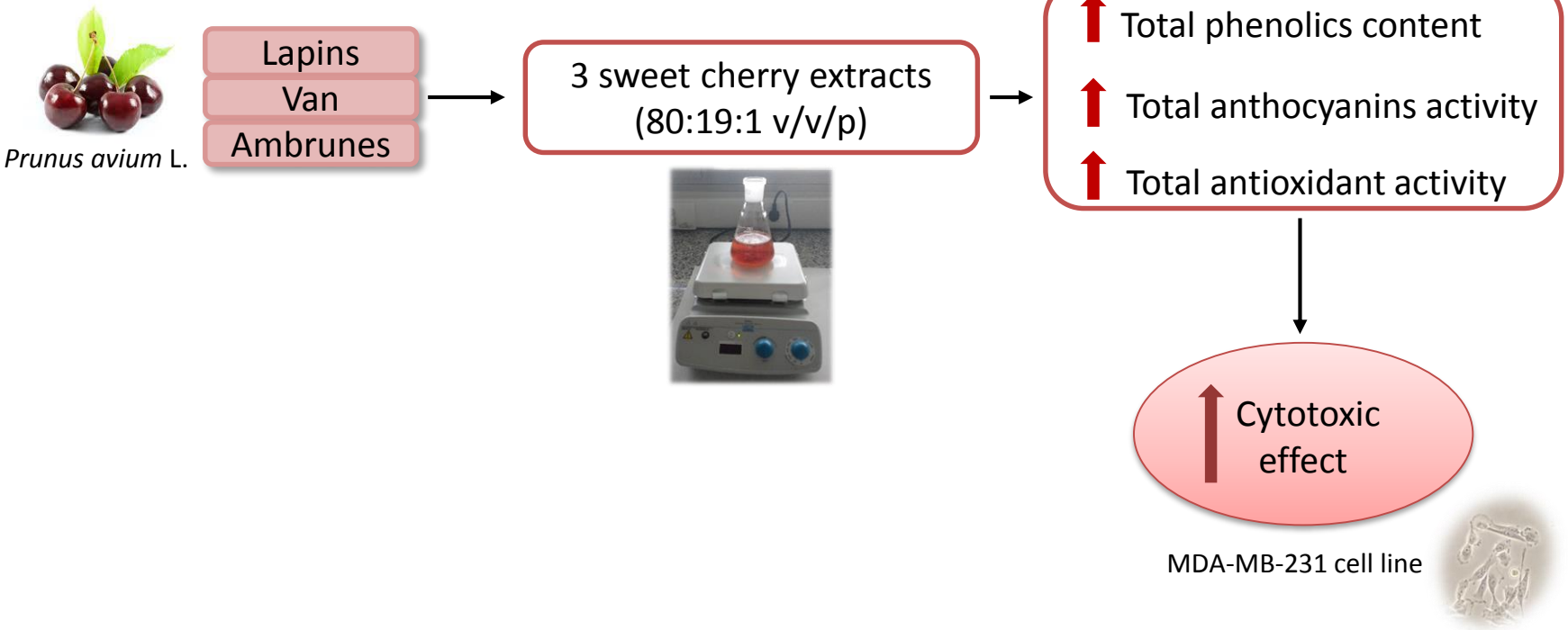
Graphical Abstract



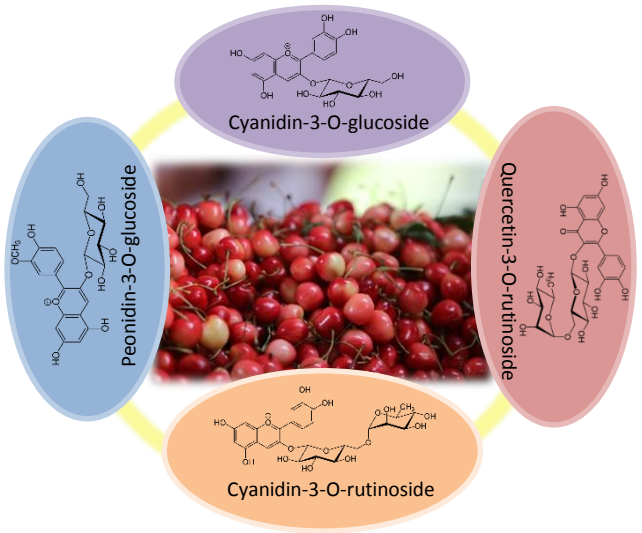
Abstract:

The extraction of bioactive compounds from by-products of the agri-food industry allows the obtaining of active biomolecules, low-cost raw materials that, after reuse, provide an economic yield as well as ecological and pharmacological benefits. The aim of this study was to evaluate the antitumoral potential of natural sweet cherry extracts, based on their functional composition. Three non-commercial sweet cherries (Lapins, Van, Ambrunes; *Prunus avium* L.) cultivars from Jerte Valley (Spain) were used as raw material for the elaboration of the different cherry extracts. These extracts were obtained by a hydro-alcoholic solution with citric acid (80:19:1 v/v/p) in agitation for 15 min at room temperature (avoiding light). Total phenolics content, total anthocyanins content, as well as total antioxidant activity were determined. Likewise, *in vitro* anticancer activity was assayed in triple negative breast cancer cell line (MDA-MB-231). All the extracts assayed possess high total phenolics and anthocyanins content, as well as elevated total antioxidant activity. Moreover, a remarkable cytotoxic effect was reported in all the three cherry extracts assayed. Sweet cherry extracts, derived from non-commercial cherry fruit, could be therefore considered as natural anticancer agents.

Keywords: Sweet cherry; by-product; sustainability; antioxidant; cancer

Introduction

Green and circular economy



Sweet cherry extracts

- Antioxidant and anti-inflammatory capacity
- Sleep-wake cycle regulation
- Mood regulation (serotonin and cortisol)

Garrido *et al.* E Spen Eur E J Clin Nutr Metab. 2009, 4; 321-323.
Garrido *et al*. Ital J Food Sci. 2013, 25: 90-97.
Delgado *et al*. J Appl Biomed. 2012, 10: 41-50.
Delgado *et al*. J Anim Physiol Anim Nutr. 2013, 97: 137-145.

Results and discussion

- Functional composition

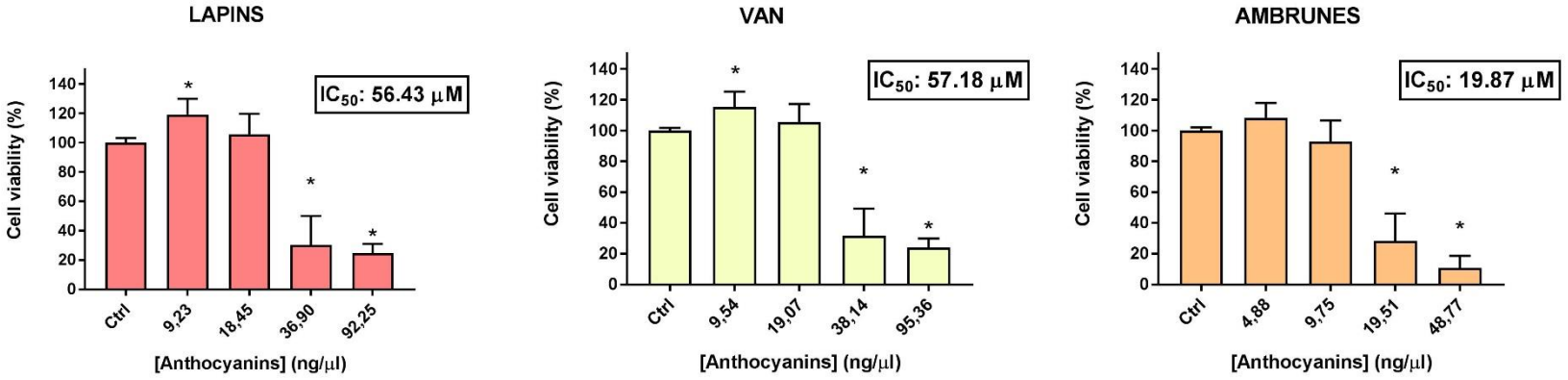
	Total phenolics content	Total anthocyanins content	Total antioxidant activity
Lapins	5112.29±1511.72	1892.44±575.92	20974.64±5268.64
Van	4986.35±637.31	2220.28±543.68	32707.85±4844.44
Ambrunes	3277.05±285.66	1118.49±187.58	20804.60±1202.49

Values are expressed as mean ± SD (mg/100 g of lyophilized cherry)

Results and discussion

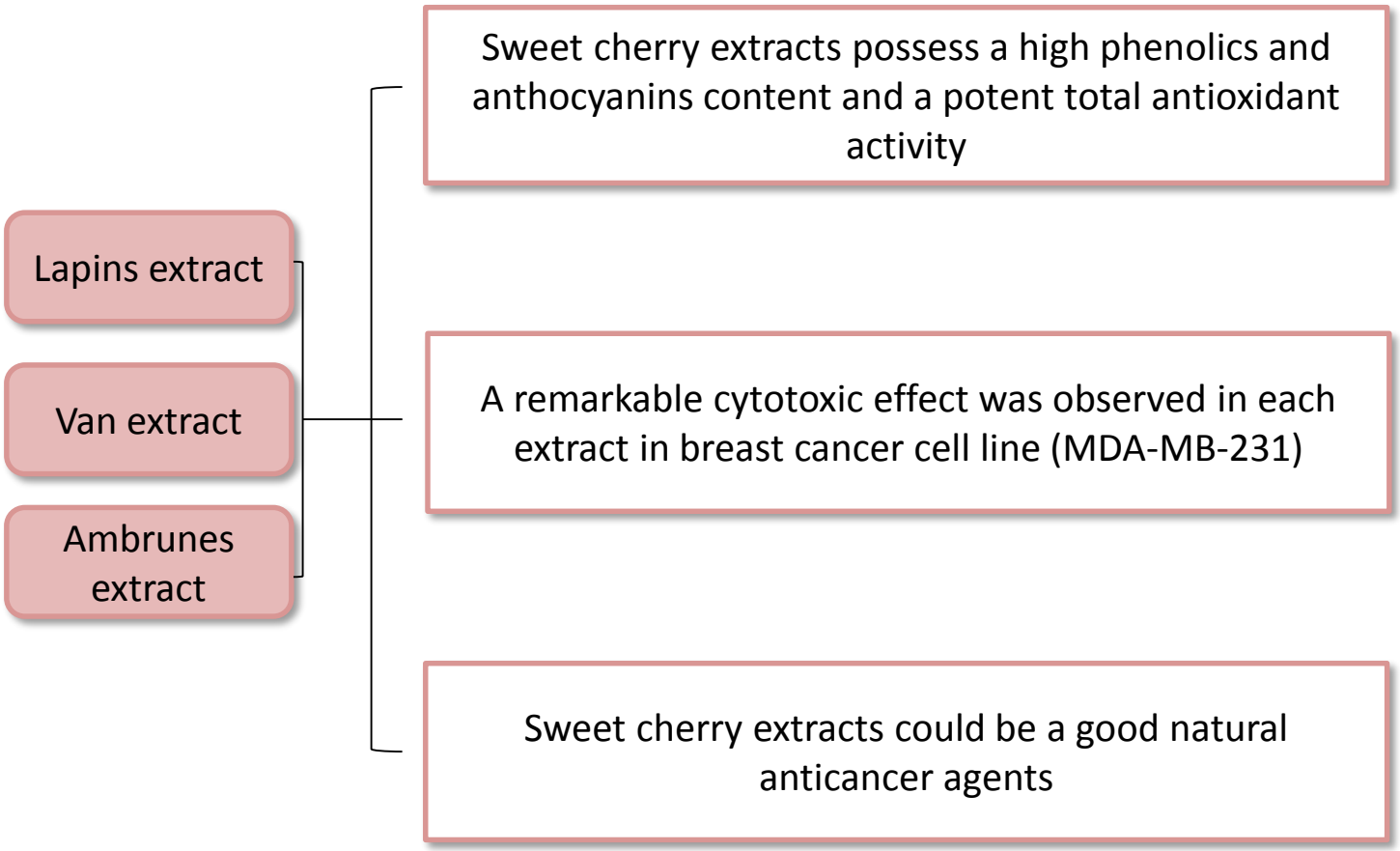
- *In vitro* cytotoxicity assay

Dose-response curve of each extract on cell viability of MDA-MB-231 cell line after 24 h of treatment with different concentration of anthocyanins



Values are presented as means ± SD of 5 separate experiments and expressed as percentage of control values (untreated samples). *P < 0.05 compared to control values.

Conclusions



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