5th MoniQA International Conference

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Food and Health - Risks and Benefits

Book of Abstracts

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Honey potentiating antioxidant and cytotoxic properties of hepatoprotective plants infusions

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The enormous variety of phytochemicals present in plants has positioned them as an invaluable source of medicines for humans. Moreover, their beneficial effects seem to be improved in combinations of herbal remedies due to synergistic effects between different plants in comparison to the additive activity of the plants present in those mixtures (Pereira et al., 2014). In addition, honey, a supersaturated sugar solution produced by honey bees from nectar of different plants, possesses a valued place in traditional medicine, with well-reported antioxidant, antitumor, hepatoprotective, antiviral, antibacterial, antifungal and immunostimulant properties (Molan, 2002). With that in mind, and since the information regarding the effects of plant infusions added with honey is rather scarce, in the present study we aimed to exploit the possible synergism between mixtures of honey and infusions of three medicinal plants (artichoke, borututu and milk thistle, either as single plant or as combinations of two and three species), with regard to their antioxidant activity and hepatotoxicity. For that purpose, the antioxidant activity was evaluated by comparing the results from different assays (radicals scavenging activity, reducing power, and lipid peroxidation inhibition), and the hepatotoxicity was assessed in HepG2 tumour cell line and in a non-tumour liver cells primary culture. The results were compared by analysis of variance and linear discriminant analysis.

With the addition of honey to the infusions, an increased antioxidant activity was verified independently of using one, two or three plants based infusions, potentiating their effects in every single cases (except β-carotene bleaching inhibition for artichoke+milk thistle+honey preparation). The preparations containing honey revealed lower toxicity in HepG2 cell lines, with the exception of artichoke+honey preparation and none of the samples (except the honey solution) was hepatotoxic in the assays carried on PLP2 cells. Moreover, from the discriminant linear analysis output, it was possible to conclude that the effect of honey addition overcame that resulting from using single plant or mixed plants based infusions. The enhanced antioxidant activity coupled to the lower hepatotoxicity showed by formulations containing honey might be helpful to define the most suitable practice in terms of infusions preparation.

Keywords: medicinal plants; antioxidant activity; hepatotoxicity; synergism; linear discriminant analysis.

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