CP079

EFFECT OF HIGH PRESSURE EXTRACTION ON THE CITOTOCIXITY AND GENOTOXICITY OF HERBAL EXTRACTS: A CASE STUDY ON STINGING NETTLE

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Stinging nettle grows wildly in the fields and is often seen as an undesirable weed. Nevertheless, its use in folk medicine for centuries is due to its biological effects, due to the rich content in bioactive compounds, that have already been proven by modern research [1,2]. Extraction is the first step to obtain natural components from herbal material, being conventional processes, such as Soxhlet, traditionally used. However, these methods have several disadvantages, such as high operation time and high temperature of extraction, causing structural and chemical alterations of the compounds. For so, it is of interest to develop new methods, such as high pressure assisted extraction (HPE) [3]. HPE can operate at room temperature, avoiding compound denaturation during extraction, enabling the recovering of heat-sensitive compounds, without major damage and denaturation, and has been recognized as an environmentally-friendly technology by the FDA [3].

The aim of this work was to study HPE as a new extraction method to obtain bioactive components from nettle leaves, avoiding high temperatures. After the optimization of the extraction conditions, by response surface methodology, the extracts were characterized on several biological activities, as antioxidant activity. Nevertheless, one of the most common problems of *in vitro* assays (such as $ABTS^{\bullet+}$ and $DPPH^{\bullet+}$ scavenging assays, that are easier and faster to use when screening for antioxidant properties) is their relative lack of biological context, since they typically disregard the molecules that the antioxidants could be protecting, such as the DNA, and the equilibria between antioxidant, pro-oxidant and the body's natural coping mechanisms. For so, in this work the antioxidant and pro-oxidant activities of the optimized extracts in the presence/absence of Fe^{3+} or hydrogen peroxide, as well as its cytotoxicity were studied. The results indicate that aqueous extracts show not only the ability to protect the DNA from degradation (high antioxidant activity) through hydrogen peroxide radicals, as also shows negative results for pro-oxidant activity, indicating that the extracts itself did not affect the DNA molecule. Relatively to the cytotoxicity, the extracts at 1.0 mg DW/mL of concentration did not present any concern towards the metabolism on Caco-2 cell culture.

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