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Bioactive phenolic compounds from hepatoprotective plants: extraction, identification and isolation

C. Pereira^a, L. Barros^a, I. C. F. R. Ferreira^a

^a Mountain Research Centre (CIMO), ESA, Polytechnic Institute of Bragança, Campus de Santa Apolónia, apartado 1172, 5301-855 Bragança, Portugal; carlap@ipb.pt.

The liver is the largest and one of the most important organs in human body, being involved in several vital functions and regulation of physiological processes. It has a pivotal role in the excretion of waste metabolites and detoxification of a variety of drugs, xenobiotics and toxins, which makes it a vulnerable target of injury caused by toxic chemicals and free radicals capable of binding to cellular macromolecules such as DNA, lipids, proteins, or carbohydrates and produce major interrelated derangement of cell metabolism [1,2]. Liver injuries are among the most serious ailments, remaining one of the major threats to public health and the conventional treatments of liver diseases are frequently inadequate due to side effects caused by hepatotoxic chemical drugs [3]. To overcome this problematic paradox, medicinal plants have been intensively exploited in what concerns their extracts and fractions composition in order to find bioactive molecules, such as phenolic compounds, that could be isolated and applied in the treatment of liver diseases. In the present work, the aim was to collect the main results of recent studies carried out in this field and systematize the information for a better understanding of the hepatoprotective capacity of medicinal plants on *in vitro* and *in vivo* systems. In a general way, the results obtained with the extracts of the studied plants justified the worthiness of the fractionation and further isolation of phenolic compounds from different parts of the plant. Twenty-five phenolic compounds, including eight flavonoids, two lignan compounds, eight phenolic acids and seven other phenolic compounds, were isolated and identified, and proved to be effective in the prevention and/or treatment of chemically induced liver damage. In this perspective, the use of medicinal plant extracts, fractions, and phenolic compounds seems to be a promising strategy to avoid side effects caused by hepatotoxic chemicals.

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References:

- [1] M. R. Ahsan, K. M. Islam and I. J. Bulbul, *Eur J Sci Res*, **2009**, 37, 302-310.
- [2] Y. W. Hsu *et al.*, *Chem Toxicol*, **2010**, 48, 1644-1653.
- [3] V. V. Asha and P. Pushpangadan, *Fitoterapia*, **1998**, 59, 255-259.