Local European Medicinal and Food Plants – how can they contribute to improved health?

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Modern European and American views about health and diet are – in a functionalistic way – an outcome of the industrial and scientific revolution and thus of the Renaissance. During the subsequent centuries food has been more and more analysed and separated into functional elements (like proteins, fat or micronutrients) which contribute to a healthy ‘whole’. Similarly, medicine has made huge advances thanks to improvements which are based on a functional understanding of our physiology.

While these bioscientific achievements have made an important contribution to our health, local traditions remain an important element of the everyday practice in most regions of the world. These local foods and medicines are generally based on a tradition which is passed on orally or in a few cases like pan-European, Ayurvedic, traditional Chinese, and Kampo health care they are part of a rich written tradition. In investigations over the last ten years, two European Union funded, multidisciplinary research consortia have focused on selected regions in the Mediterranean basin, which has a long and multifaceted cultural history and harbours a high biodiversity. Epidemiological studies have drawn attention to health beneficial elements of certain traditional Mediterranean diets. However, local wild gathered food species which are an important, but fast disappearing element of these diets have so far been largely neglected in scientific studies. Similarly, surprisingly little research has focused on the medicinal plants of these traditions. In this presentation ethnobotanical data obtained from field studies conducted in Southern Italy, Southern Spain, mainland Greece and Crete resulting in the identification of a core group of 18 culinary used wild gathered plant species will serve as an example of the approach. This group comprises species like Papaver rhoeas L., Reichardia picroides Roth, Sonchus asper L., S. oleraceus L. and Silene vulgaris L. Our understanding of the species possible pharmacological effects is certainly helped by the in-depth understanding of biochemical mechanisms associated with certain groups of natural products like flavonoids, certain fatty acids, as well as to a more informed phytochemical analysis of such species (Leonti et al 2006).

About 140 of these species have been investigated for anti-oxidant activity using a variety of in vitro assays (incl. guaiacol oxidation, xanthine oxidase, HOCl scavenging, eNOS activity), for effects against a variety of targets of relevance in chronic and acute inflammation, in the comet assay to detect protection from oxidative DNA damage and for angiogenic activity. All extracts are profiled using HPLC-MS and the extract's polyphenol content is determined. Reichardia picroides Roth collected both in Italy and Greece showed the highest overall activity score of the species; Papaver rhoeas L., a species also collected in other regions of Italy and in Greece was another species which showed noteworthy activity (The Local Food-Nutraceuticals Consortium 2005)

Another example is Bupleurum fruticosum L.(Apiaceae), which was known under the Greek name of "Seseli aethiopicum" and its medicinal uses are reported as early as in the 1st century AD by Dioscorides having warming faculties, and was used for strangury, urethral straggling, orthopnoea, epilepsy and as an emmenagogue. There are indications that today the aerial parts are traditionally used as an anti-inflammatory and antiseptic drug. In this case possible anti-inflammatory effects focusing on the transcription factor NF-kappaB were at the centre of our interest. Two phenylpropanoids were shown to inhibit the transcriptional activity induced by PMA or TNFalpha of an NF-kappaB-controlled reporter gene. Western blot experiments indicated that the phenylpropanoids did not prevent IkBalpha degradation suggesting that their molecular target...
is at a post-IKB degradation level. Both compounds prevented cytokine (IL-1, IL-6, TNF, IL-8) release and prostaglandin E2 synthesis (Bremner et al 2004).

This multidisciplinary research contributes to the understanding of locally used food plants and potentially to the development of novel health food supplements and novel crops, but also to the safeguarding of this rapidly vanishing traditional knowledge in the communities which still use such local resources.

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