Medicinal Plants Used in the Treatment of Microcirculation, Menstrual and Menopause Diseases: Development of New Strategies Applied to the Analysis of Extracts and Commercial Products

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According to the Italian legislation (DM 9 luglio 2012 -G.U. 21-7-2012, n. 169) only plant species reported into an official list (http://www.salute.gov.it/imgs/C_17_pagineAree_1268ListaFile_itemName_2_file.pdf) can be used for the formulation of food supplements. Despite the high distribution and consumption of these commercial products, in many cases no information are available concerning with the chemical composition and the qualitative analysis of both original plant species and relative food supplements.

A project addressed to the development of analytical techniques for the study of plants reported into the Italian official list and derived preparations used in the prevention of Premenstrual Syndrome (PMS), menopause and microcirculation diseases has been carried out. In particular identification and characterization of secondary metabolites occurring in polar extracts of *Ruscus aculeatus* (L.) (Liliaceae) and *Helichrysum italicum* (Roth) G. Don (Asteraceae) to which positive effects on microcirculation diseases are associated, and of *Vitex agnus-castus* (L.) (Verbenaceae), *Potentilla anserina* (L.) Rydb (Rosaceae) and *Potentilla erecta* (L.) Raeuschel (Rosaceae) reported to be active against PMS, were investigated by different analytical techniques in a such a comprehensive analytical study integrating GC-MS, LC-MS, NMR data and multivariate statistics. By using these techniques both metabolite profiling and metabolic fingerprinting approaches were considered for the study of all reported species.

In some cases comparative studies among the original extracts and commercially available food supplements have been performed. Finally, a multivariate statistical approach, in particular Principal Component Analysis (PCA) approach, was applied in order to highlight the differences between analyzed samples, allowing an easier data interpretation.