PHENYLPROPANOID RICH ESSENTIAL OILS AS POTENTIAL ANTITHROMBOTICS ENDOWED WITH GASTROPROTECTIVE EFFECTS.

Tognolini Massimiliano [1], Barocelli Elisabetta [1], Bertoni Simona [1], Impicciatore Mariannina [1], Bruni Renato [2], Ballabeni Vigilio [1]

[1]Dept of pharmacological, biological and applied chemical sciences. University of Parma. Viale Usberti 27/a, 43100 Parma, Italy
[2]Dept of evolutionary and functional biology. University of Parma. Viale Usberti 11/a, 43100 Parma, Italy

We recently demonstrated the relationship between in vitro antiplatelet activity of essential oils and their content in phenylpropanoids (1). In particular we discovered an interesting inhibitory activity of *Ocotea quixos*, *Foeniculum vulgare* and *Artemisia dracunculus* oils in ADP-, AA- and collagen induced platelet aggregation.
Hence, we deepened the study of these phenylpropanoid rich oils in order to define their antithrombotic efficacy and tolerability in vivo and to ascertain the involvement of their main components (anethole in *F. vulgare*, estragole in *A. dracunculus*, cinnamaldehyde and methyl cinnamate in *O.quixos*).
All the oils dose-dependently prevent paralysis and death due to collagen-epinephrine induced thromboembolism in subacutely treated mice. *O.quixos* and *F.vulgare* are active starting from 30 mg/kg/day orally administered for 5 days whereas *A. dracunculus* results at least 10 times less potent. The principal ingredient of *F. vulgare* essential oil, anethole, shows significant protection against thrombogenic activity of collagen-epinephrine at 3 mg/kg/day. On the contrary, estragole as well as cinnamaldehyde and methyl cinnamate, the main components of *A. dracunculus* and *O.quixos* oils, respectively, are inactive as antithrombotic up to 30-100 mg/kg/day, although estragole and cinnamaldehyde are endowed with good antiplatelet properties in vitro.
None of the oils, at antithrombotic dosages, increases bleeding time or decreases mice body weight (used as a parameter of subacute toxicity). Moreover they not only show a good gastric tolerability but two of them (*O. quixos* and *F. vulgare*) are able to prevent ethanol-induced gastric ulceration when orally administered at 100 mg/kg in rats.
On the whole, these data provide evidence of significant and safe protective properties of *F. vulgare* and *O. quixos* oils in experimental thrombosis. They suggest that anethole is probably the main responsible for the antithrombotic activity of *F.vulgare* oil whereas cinnamaldehyde, as a component of the phytocomplex, could contribute to the antithrombotic activity of *O.quixos*.

1) Tognolini M., Barocelli E., Ballabeni V., Bruni R., Bianchi A., Chiavarini M., Impicciatore M. (2006) Life Sci. 78:1419-32.