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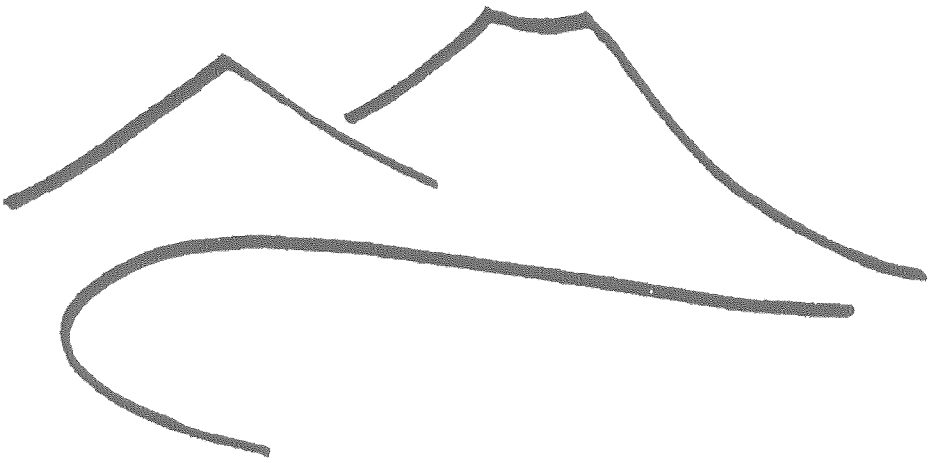

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Programma e Abstract

P31. *Allium cepa* L. var. Tropea: a source of nutraceuticals with anti-obesity potential

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Obesity represents the most prevalent nutritional disease and a major public health problem that, according to WHO, has reached epidemic proportions worldwide. Obesity is a factor of risk for several chronic diseases including diabetes, cardiovascular diseases and cancer. There are several strategies to prevent or treat it, one of them is the inhibition of gastrointestinal lipases. In the recent years, the side effects of some synthetic lipase inhibitors indicated the need for alternative drugs with this activity, including natural products. Plants provide a major dietary source for nutraceuticals with anti-obesity potential and, in some cases, their plausible mechanism of action has been highilighted. Following previous studies on plant investigation as a source of inhibitors of pancreatic lipase, we present here the phytochemical and biological profile of a dry skin hydroalcoholic extract of *Allium cepa* L. var. Tropea.

Flavonoid glycosides were the main specialized metabolites present in the extract, with quercetin-4'-*O*-glucoside (43±0.002 μg/mg) and quercetin (84±0.004 μg/mg) as the two main components and cyanidin-*4*-glucoside (1±0.001 μg/mg) as a minor component.

The ability to inhibit pancreatic lipase was evaluated *in vitro* by monitoring the hydrolysis of *p*-nitrophenyl caprilate, which releases the yellow chromogen *p*-nitrophenol. The sample was tested at different concentrations and showed a very good inhibitory activity with IC_{50} value of 0.77 ± 0.03 mg/ml.

It has been shown that obesity can impair intestinal barrier function inducing alteration in permeability and eventually causing inflammation. The effect of the extract on model Planar Lipid Membranes (PLMs) made up of dioleoyl-phosphatidylserine: dioleoyl-phosphatidylethanolamine: palmitoyl-oleoyl-phosphatidylcholine (27:27:18,w:w:w), a surrogate of intestinal membranes, has also been investigated. The extract of *A. cepa* L. var. Tropea was effective in forming channel-like pathways in the lipid bilayer. Electrophysiological data demonstrated that the extract interacts and forms stable pores in PLMs when added on the *cis* side of the medium facing the membranes. The effect of different concentrations (0.01 and 0.02mg/mL) in the ranges of applied voltages from 20 to 120mV and from -40 to -120mV was studied. The conductance values seem to be dependent on applied voltages decreasing as the voltage increases thus suggesting that lower applied voltages promote the ionic flux.

Overall, results from this study suggest that it is worth to further investigate the pharmacological potential of this extract from *A. cepa* L. var. Tropea and its main nutraceutical constituents as safer therapeutic agents in anti-obesity therapy.