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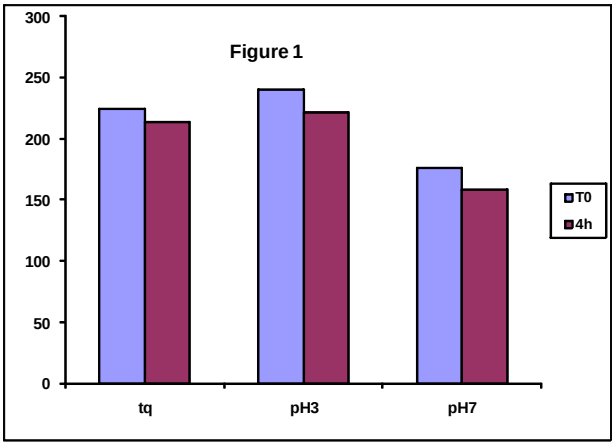
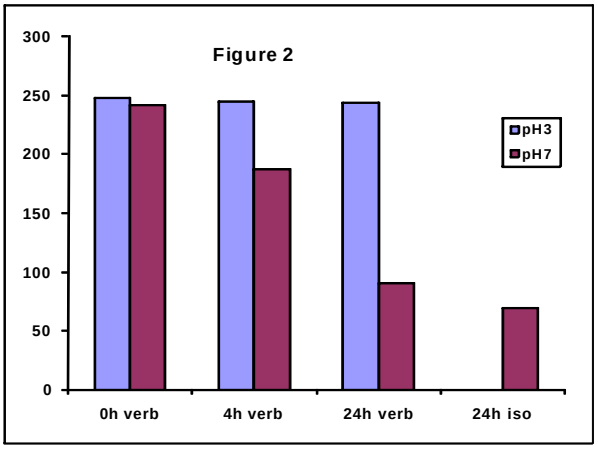
10 day "short term mobility" to collaborate with the CNR Institute of Sciences of Food Production (ISPA) on Formation of verbascoside oxidation products from purified OMWW under simulated digestive conditions.

Results

- Two experiments were carried out in order to verify oxidative processes as a primary factor in degradation of verbascoside when exposed to both gastric and small intestinal conditions. Pure verbascoside was extracted and purified from OMWW using low pressure chromatography on Sephadex LH-20, was incubated at 37°C, at two different times, 4 hr and 24 hrs, and at two different pHs (4 and 7) in absence and presence of O_2.
- HPLC analysis demonstrated the stability of verbascoside at gastric conditions (pH 3) with a recovering of 100% at both the incubation times, instead at pH 7, very close to the small intestinal conditions, different oxidation products were recovered. The development of oxidation products was also influenced by the time of incubation. In fact, the verbascoside loss was of about 22.7% after 4 hrs. After 24 hrs, the verbascoside loss was much more evident with a 62.4% respect at the beginning and of 51.3% respect to 4 hrs (Fig. 1). In addition after 24 hrs the isomer isoverbascoside was produced in the same amount of verbascoside (Fig 2). In all the samples analyzed at pH 7 other compounds not indentified were recovered.





- During his stay at ISPA, Prof. Mario Ferruzzi gave a lecture entitled: "Research at the interface of food and nutrition sciences: Improving phytochemical bioavailabilty". This workshop was a good occasion even for the other researchers of the institute for establishing useful interactions with him.

- The research is being continued in the laboratory of Prof. Ferruzzi in Food Science Department of Purdue University with the aim to identify specific oxidation products using LC-MS-TOF analysis and to quantify levels of them. In addition, the assessment of the potential of absorption of the verbascoside oxidation products using a Caco-2 human

intestinal cell model, has been completed and samples on verbascoside uptake and metabolism are awaiting analysis. Otherwise, our research group at ISPA, will assess the antioxidant activity and the anti-inflammatory activity of this oxidation products using cell free and cellular system.

- The results obtained will supply new knowledge about the potential intestinal absorption of verbascoside, isoverbascoside and other oxidative derivatives. The data obtained, besides being used for scientific publications, may provide useful information for *in vivo* studies on the bioavailability and bioactivity of these compounds.