HPLC-MS Analysis of Glucosinolates in B. oleracea for the Development of New Nutraceuticals

1)Baldan V. 2)Sut S. 3)Francescato S. 4)Dall'acqua S.

Department of Pharmaceutical and Pharmacological Sciences,

Broccoli (Brassica oleracea var. italica) is a good source of health promoting compounds since it contains glucosinolates, flavonoids, hydroxycinnamic acids and other minor compounds; glucosinolates, sulfur containing compounds typical of brassicaceae are very well known for their chemopreventive and health promoting role. When they come into contact with myrosinase (thioglucoside glucohydrolase) in plant-damaged tissues, this enzyme hydrolyzes glucosinolates yelding biologically-active products, including isothiocyanates, thiocyanates, nitriles.

An HPLC-TQD-MS method was developed allowing the identification of intact glucosinolates without any derivatizations, basing on the molecular ion and on the characteristic fragments formed, letting a simplification of previously used methods.

The aim of this study is evaluate the content variation of glucosinolates and other main compounds during the lifetime of plant, from sprouts to the adult leaves to identify the stage with a higher amount of active compounds, after myrosinase inactivation. The main glucosinolates present in broccoli are glucoraphanin, glucoerucin and indolic glucosinolates. The final intent is the development of a new nutraceutical ingredient of Broccoli.

A. I. Owis (2015). J. Pharm. Sci. & Res. vol. 7(9), pp. 696-703

D. Van Eylen et al. (2006). Food Chemistry 97, pp. 263–271

G. F. Antonious et al. (2009). J. Environ. Science and Health B vol. 44, pp. 311–316

E. Koh et al. (2009). J. Food Compos. Anal., vol. 22, pp. 637–643