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### Bioactive biomasses in food and non food application—the case study of *Brassicales*

In a growing sustainability in agriculture, the valorization of bioactive biomasses could play a fundamental role in a green chemistry approach. Among this wide biodiversity, the glucosinolate myrosinase system, typical of *Brassicales* has showed in the last 20 years of research some applications both in food and non-food field. Three experiences at different levels of progress based on different biomasses will be presented and discussed: 1. Open field studies on interaction of Brassica biomasses on bees and pollinators. Definition of innovative agroecological processes applicable to agricultural systems and in apiculture 2. Design, realization and standardization of bakery products enriched with *Eruca sativa*. The effects of daily consumption of the new products on glucose, lipid metabolism, and systemic markers of inflammation were assessed in a clinical trial. Glucose and lipid metabolism showed some light changes in total HDL, and LDL cholesterol led to a significant reduction of cholesterol ratio. High sensitivity C-reactive protein (CRP) showed a significant reduction (-36.8%,  $P=0.02$ ) as TNF- $\alpha$  (-11.3%;  $P=0.001$ ), as well as systemic inflammation markers 3. Commercial application of a ten-year Italian experience of plants and plant-based material in the so called biofumigation technique for plant management and defence in agriculture sector. Starting from different species defined innovative green manure and patented bioproducts as different solid (meals, powder, pellet) and liquid materials that are now applied in 24 countries of the world, both in organic and conventional horticulture. These experiments were done with the application of only some species of *Brassicales*, while, in the world, there are over 3500 species with 200 known glucosinolates present. Hence, we can say that *Brassicales* can be considered an undiscovered patrimonium for the present and the future.

### Biography

Luca Lazzeri completed his Degree in Agriculture from the University of Florence. From 1988, he is a Researcher of CREA CI. He has published more than 50 papers in reputed journals and has been serving as an Editorial Board Member of *Industrial Crops and Products*.

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