

## Development of nutraceuticals to enhance the capacity of the immune system

**Irene Dini**

*Department of Pharmacy, Federico II University of Naples, Italy*

### Abstract

**S**tatement of the Problem: The advent of SARS- CoV-2 in December 2019

has immobilized the world. It is an RNA virus able to determine severe acute respiratory syndrome. There are no drugs that can cure COVID -19 patients. A healthy nutritional status inhibits the start of severe infection and enhancing immune function. World Health Organization recommends eating every day some unprocessed foods, low portions of fats, oils, sugars, and salt, and drinking some water. A good state of hydration decreases the risk of infections allowing efficient transport of ions and metabolites in the body and keeping body temperature under control. Some food and nutrients can influence systemic markers of immune functions. Phytochemicals in foods can help or stop severe reactions in COVID-19 patients. Among these, some natural polyphenols have antiviral properties and are hypothetically suitable for reducing the acute effects of COVID-19. The resveratrol has shown antiviral and immunomodulatory properties. It is a stilbenoid. Red wine, apple, red grape, rhubarb, blueberries, peanuts, and olive are food sources of resveratrol. Both trans- and cis isomeric forms are in the plants, but the trans isomer is the most abundant and biologically active in nature. It acts in a dose-dependent manner on adaptive and innate immunity. Resveratrol activates natural killer, macrophage, and T cell (NK). It inhibits the inflammatory response decreasing the cyclooxygenase, and activating Sirtuin-1, a deacetylase able to control T cell stimulation and suppress inflammation. In silico works have shown that resveratrol inhibits COVID-19 disrupting the spike protein. In this study, a new olive nutraceutical product, able to supplement the resveratrol it has prepared to enhance the immunity defenses. **Methodology & Theoretical Orientation:** The nutraceutical potential of the product was evaluated in terms of the resveratrol content and antioxidant activity. Resveratrol content was obtained by Q Exactive Orbitrap LC-MS/MS and antioxidant activity by ABTS experiments. Finally, the palatability and shelf-life of the new nutraceutical product were tested. The shelf-life stability was confirmed by molds, yeast, and total microbial count; water activity and pH determinations. **Conclusion & Significance:** In this study, we tested a new nutraceutical product enriched in resveratrol. We obtained a product with interesting market perspective with good palatability, and stability.



### Biography:

Irene Dini is a researcher in Food Chemistry at the Department of Pharmacy of "Federico II" University of Napoli, Specialist in 'Food Science', Ph.D. in 'Natural Compounds Pharmacologically Active'. For a long time, she has evaluated the nutraceutical potential of underutilized plants, isolating, and characterizing the secondary metabolites they contain. Today she develops and validates analytical methods for the determination of secondary metabolites in food plants and assesses the nutraceutical potential of phytochemicals in food plants. Nutricosmetics is a new trend of the cosmetic industry which uses food or oral supplements to produce an appearance benefit.

### Speaker Publications:

1. Fanelli, F.; Cozzi, G.; Raiola, A.; Dini I, Mulè G, Logrieco AF, Ritieni A. (2017) Raisins and Currants as Conventional Nutraceuticals in Italian Market: Natural Occurrence of Ochratoxin A .Journal of Food Science 82 :2306-2312
2. Dini, I., Seccia, S., A. Senatore, D. Coppola, Morelli, E. (2019) Development and Validation of an Analytical Method for Total Polyphenols Quantification in Extra Virgin Olive Oils. Food Analytical Methods 13:457-464.
3. Dini I., Graziani G., Fedele F. L., Sicari A., Vinale F. Castaldo L. and Ritieni A. (2020) Effects of Trichoderma Biostimulation on the Phenolic Profile of Extra-Virgin Olive Oil and Olive Oil By-Products. Antioxidants 9: 284.
4. Dini, I.; Graziani, G.; Gaspari, A.; Fedele, F.L.; Sicari, A.; Vinale, F.; Cavallo, P.; Lorito, M.; Ritieni, A. (2020) New Strategies in the Cultivation of Olive Trees and Repercussions on the Nutritional Value of the Extra Virgin Olive Oil. Molecules 25: 2345
5. Dini I., Graziani G., Fedele F. L., Sicari A., Vinale F., Castaldo L. and Ritieni A. (2020) An environmentally friendly practice used in olive cultivation capable of increasing commercial interest in waste products from oil processing. Antioxidants 9: 466.

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