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Bioactive Natural Products

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Plants biosynthesize small organic compounds, known as secondary metabolites, which are an integral part of the plant's developmental program as they are involved in complex biotic and abiotic interactions, acting as signal, defense or protectant compounds. Several of these naturally occurring substances, broadly recognized to exert pharmacological or toxicological effects in humans and animals, are still the main source of lead molecules in modern drug discovery and development, and make the natural products research an endless and intriguing research field with multidisciplinary approach.

Nowadays, the research for secondary metabolites with health promoting effects in countering or slowing-down chronic and degenerative diseases (e.g. cancer, cardiovascular, and neurodegenerative diseases) identify phenols and polyphenols, widespread and mostly copious in dietary plant sources, as beneficial for human health. These compounds, as intrinsically antioxidant, are claimed as nutraceuticals with preventive efficacy in offsetting oxidant species over-generation in normal cells, and with the potential ability to halt or reverse oxidative stress-related diseases. In this context, pure (poly)phenols and/or their herbal/food complex were found to exert both anti- and pro-oxidant activities, suggesting also a promising chemopreventive efficacy. In fact, different evidences further highlight their ability to induce apoptosis, growth

arrest, DNA synthesis inhibition and/or modulation of signal transduction pathways. Indeed, a full understanding of the phenolic and polyphenolic composition of plant species, which still now represent their inestimable and worth exploring source, is an important challenge, which today can and must be favourably pursued in the consciousness that the bioactivity of a plant extract is always in its chemistry.

This talk will deepen into polyphenol research, focusing on biosynthesis, analytical approaches and exploitable activity of plant extracts rich in antioxidant and anti-inflammatory polyphenols and/or pure isolated polyphenols, which could significantly benefit human health and wellbeing towards non-communicable diseases.

Speaker Biography

Severina Pacifico is associate professor in Food Chemistry at the University of Campania "Luigi Vanvitelli" (Italy). Her research interest, in the field of Natural Products and Food Chemistry primarily aims to the phytochemical study of medicinal and/or edible plants; to the chemical characterization of secondary metabolites by spectroscopic and spectrometric techniques; to UHPLC-HRMS/MS metabolic profiling and fingerprinting of natural extracts; and to the evaluation of antioxidant, chemopreventive and neuroprotective properties of natural products (phytochemicals and secondary metabolites therein).

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