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Curcumin: A multifunctional compound from natural sources and current state of its research

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Turmeric plant, *Curcuma longa*, a popular, thousands of years used Indian spice for the human nutrition for centuries used in herbal medicines for the treatment of a variety diseases, is constantly in the focus of the world scientific community. Gladly consumed in a daily dosage of approximately 3 g/70 kg, this spice is used as a food but serves as a safe, natural medicament, without any perceived adverse, side effects in clinical trials. Thanks to the aforesaid, curcumin, as a main ingredient of turmeric, is the subject of intensive examination of various, mutually intertwined scientific fields—nutrition, food chemistry, medicine, and pharmacy. Antioxidant, anti-inflammatory, antibacterial, anti-proliferative, anti-carcinogenic, anti-amyloidogenic, antiviral, anti-HIV effects are just some of the many biological activities which this vital compound possesses. The structure of curcumin and its ability to overcome multidrug resistance of different cancer cells represents a main base for its implementation as a therapeutic agent. However, a weakness of this, justified-popular compound, consists of its low water solubility and stability, rapid metabolism and thereby poor absorption/bioavailability. Exactly the stated “weaknesses” of curcumin are the main guidelines for further researches. Nanoparticle-based carriers, different forms of curcumin encapsulation in different micelles, and improving drug delivery systems are some of today’s existing solutions for overcoming the specified drawbacks of curcumin. The significance of the quality of a substance delivery system is reflected in the fact that carrying curcumin as a food additive/nutrition also means carrying the active biological product/drug. Implementation of a safe and functional compounds from natural sources in therapy, carried out some modifications in order to achieve their multi-functionality, improve their bioavailability and delivery strategies, and reduce the potentially-negative side effects, with the main aim to enhance their effectiveness; these are the prime guidelines for the future scientific research teams, all over the world.

Biography

Zorka Stanić is working as an Associate Professor of Faculty of Science and has gained her experience in both research and teaching. She has been investigating Fundamental and Applicable Chemistry, particularly focusing on sensors/biosensors and compounds of a great importance for human. In recent years, she has built a special interest towards food additive/nutrition with an active biological/drug function and, hence, she is widely open to investigating naturally occurring polyphenols, much further. These scientific studies include evaluation and application of safe, beneficial and highly multi-functional compounds from natural source in nutrition and therapy.

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