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Special Issue Reprint

Methodologies for Improving Antioxidant Properties and Absorption

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This Special Issue, entitled "Methodologies for Improving Antioxidant Properties and Absorption," provides an overview of various approaches to overcoming the limitations of antioxidant absorption, such as poor stability, low bioavailability, and rapid degradation. A primary focus is on molecular modification, where the chemical structure of antioxidant compounds is strategically altered to enhance solubility, biological activity, or stability under physiological conditions. An equally vital approach involves the use of advanced delivery systems. These technologies—including nanocarriers, liposomes, microemulsions, and encapsulation matrices—are engineered to protect antioxidant molecules, facilitate their transport across biological barriers, and ensure targeted delivery, thereby maximizing their therapeutic effect. The applications span diverse and impactful areas of daily life and advanced medicine, from enhancing the preservation and nutritional value of foods and nutraceuticals, to improving efficacy in cosmeceuticals, to developing targeted pharmaceutical interventions for diseases. Although research in these fields is advancing at a rapid pace, substantial challenges persist in translating laboratory successes into consistent, scalable, and clinically effective solutions. Bridging the gap between fundamental research and practical application requires continued interdisciplinary innovation. Each study and technological advance contributes meaningfully to a more comprehensive understanding, steadily paving the way for antioxidants to achieve their full preventive and therapeutic promise.

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