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Natural antioxidants are desired as food additives and can be used as food ingredients to prevent lipid oxidation and extend the shelf-life of the final product. Likewise, nutraceutical, dietary supplement, and natural health product industries have taken advantage of the myriad of applications in which antioxidants from natural sources may be considered. The stability of natural antioxidants upon food processing seems to be a challenge since it is generally accepted that some molecules may not withstand thermal and non-thermal processing. However, with the advancement of analytical techniques, many studies have demonstrated that some of them may actually benefit from processing and hence show improved antioxidant properties. As for their health benefits, the bioaccessibility, bioavailability, and metabolism of natural antioxidants and effects of human microbiota are hot topics that are being increasingly researched. However, to better understand these subjects, concepts involving their form of occurrence such as soluble versus insoluble-bound, lipophilicity, conjugation, and/or degree of polymerization must be adequately considered. Most information available thus far is related to the ability of natural antioxidants to act as free radical scavengers and/or to neutralize prooxidative metal ions. Nevertheless, antioxidant compounds are also involved in the suppression of oxidative stress-induced DNA damage and LDL-cholesterol oxidation, biomarkers of mutagenesis and increased risk of coronary heart disease, among many other benefits that may not be related to their antioxidant potential. Additionally, at the cellular level, these molecules also modulate the expression of antioxidant enzymes. Since oxidative stress is a common outcome in non-communicable diseases, even indirectly, natural antioxidants can alleviate some of the effects of diabetes and obesity, including inflammatory responses. This special issue covers different aspects of natural antioxidants in food application, i.e. from the feedstock to the final product, and their potential health benefits, from the gastrointestinal tract to the brain. It is hoped that this collection sheds some light on the current gaps in the available literature and to point out to the next steps to be taken to advance the science of antioxidants in food, nutraceuticals, dietary supplements and natural health products.

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