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Oxidoreductase in food industry – A review

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Oxidoreductase enzymes cleave the chemical bonds and facilitate the transfer of electrons from a reduced organic substrate (donor) to another chemical compound (acceptor). Depending on the catalytic activity, oxidoreductases are classified to 4 subgroups, such as (a) oxidases, (b) peroxidases, (c) oxygenases/hydroxylases and (d) dehydrogenases/reductases. They can work wide ranges of substrates, such as carbohydrates, proteins, unsaturated fatty acids and phenolics. Different oxidoreductases, such as (a) glucose oxidase, (b) hexose oxidase, (c) catalase, (d) laccase, (e) tyrosinase, (f) peroxidase and (g) lysyl oxidase are successfully applied in bakery, livestock, dairy and beverage (wine, juice and brewery) industries. As the result of biotransformation of biomolecules in food matrix with oxidoreductase, different physical parameters of food formulas are modified. Furthermore, their application in food packaging is noteworthy because they are known as oxygen-scavengers. In this review, biochemical features of different types of oxidoreductase and their applications in food industries have been portrayed with comprehensive way. It is expected that this review will receive a great attention in food industries.

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Microencapsulation of flaxseed oil – A review

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Remarkable interest has been accorded to flaxseed oil due to presence of high concentration of ω -3 fatty-acids (α -linolenic acid, eicosapentaenoic acid and docosahexaenoic acid) within it. A member of polyunsaturated fatty-acids, ω -3 fatty-acids from both plant and marine resources offer several nutritional benefits as well as reduce the risk factors of several diseases. In order to protect ω -3 fatty-acids in flaxseed oil against oxidative degradation during storage and food processing, microencapsulation has been adopted in several times. Furthermore, microencapsulation of ω -3 fatty-acids is considered as a controlled delivery system. To prepare microcapsule, in first stage emulsion of oil-water along with maltodextrin, gum arabic, whey protein, modified starch and methyl-cellulose has been performed. Subsequently, freeze drying and spray drying have been adopted. This review provides comprehensive information about different technological aspects of microencapsulation of flaxseed oil. Furthermore, characterization of microcapsule in different aspects has been discussed in comprehensive way.