Mushroom: a potential anti-aging agent

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Abstract

Aging is a progressive physiological change in an organism that lead to senescence or a decline of biological functions of the organism's ability to adapt to metabolic stress. Aging takes place in a cell, an organ, or the total organism with the passage of time. As much as this is change is natural, it can be hastened by both the biotic and abiotic factors and the organism's inherent factors. Of these factors, reactive oxygen species (ROS), induced by various endogenous and exogenous sources has been shown to be the most potent aging agent in organisms. Almost all organisms have antioxidant defence mechanisms. However, these are often inadequate to completely prevent oxidation stress-induced damage. Consequently, antioxidant supplements or natural foods containing antioxidants may be used to reduce oxidative damage to the human body. For example, some naturally occurring foods contain fiber, pigments (e.g. betalains, carotene, Xanthophyll, lycopene and chlorophyll) and other bioactive components all of which have been shown to be strong antioxidants. Since antiquity, mushroom, a fungus, has been part of the normal human diet and currently, the amount consumed has increased greatly, involving a large number of species, both the cultivated and the wild. The increase is due to reported health benefits which have been associated with regular mushroom consumption. The main bioactive molecules in mushroom are phenolic compounds (phenolic acid and flavonoids), tocopherols, ascorbic acid, carotenoids polysaccharides, lipopolysaccharides and peptidoglycans. These bioactive molecules have been shown to have a significant antioxidant activity which is manifested by a lower EC_{50} value. *Pleurotus eryngii*, *Agaricus bisporus*, *Flammulina velutipes* and *Lentinula edodes* have been shown to have a high antioxidant potential. This review will discuss ROS, their effect on biological systems and the antioxidant properties of mushrooms with special attention on some popular edible and medicinal mushrooms.

Keywords: *Aging; Antioxidant; Reactive oxygen species; Mushrooms; Bioactive molecules; Oxidative damage.*