

Nutraceutical Significance of Selenium Biofortified mushrooms

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Abstract

The trace element selenium plays a significant role in the health of human beings and livestock as it is required for the synthesis of various enzymes and selenoproteins which in turn is responsible for various functions like antioxidant, anticarcinogenic, immunomodulatory, detox property, proper functioning of thyroid gland, motility and maturation of sperm. Mushroom cultivation and consumption in India is increasing due to its dietary values, nutraceuticals and bioactive compounds. The mushrooms are rich source of various nutrients like proteins, carbohydrates, minerals, phenols, antioxidants, fiber, vitamins and poor in cholesterol. The total selenium concentration of surface water varies from 2.0 to 519.3 $\mu\text{g/L}$ with a mean value of $46.0 \pm 127.8 \mu\text{g/L}$ ($n=48$). Out of which, 70.5–99.5% was available in Se(VI) form. The concentration of selenium in soils ranges from 2.89 to 87.3 $\mu\text{g/g}$ with a mean value of $9.36 \pm 18.6 \mu\text{g/g}$ and majority of the selenium exists in organic form. The total selenium concentration in corn, rice and vegetables were $3.76 \pm 11.6 \mu\text{g/g}$, $2.11 \pm 2.87 \mu\text{g/g}$ and $2.09 \pm 3.38 \mu\text{g/g}$ respectively. The Se accumulated in paddy soils is derived from stream water which in turn depends on carbonaceous shale and mine leaching. Several edible & cultivated mushrooms show wide range of biological activities but they are deficient or poor in Se content. So, there is a need to findout a way to increase Se content of mushrooms. One such way is biofortification as mushrooms are well known for their ability to accumulate and mobilise various elements. Se-biofortified mushrooms produced by growing on substrates supplemented with Se in the form of inorganic or organic salt and agricultural residues hyper accumulated with Se serves as an excellent source of Se. In comparison to inorganic form of Se the organic form is more bioavailable. Nutraceuticals are the ones derived from food products that aid in promoting health by preventing and curing several chronic diseases. Several products or extracts from biofortified cultivated edible mushroom fruiting bodies and myceliums contain therapeutic properties or serve as nutraceuticals.

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Biography

The Anduri Sravani has completed his PhD in Molecular Physiology applications to pharmacology at the age of 32 years from Zhejiang University, China, in 2014, one of the Thomson Reuters and Elsevier best ranked university of the world; he is now working as an Associate Profess or in the Department of Physiology in Chitwan Medical College affiliated to Tribhuvan University, Nepal, on the part of

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