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Vitamin D in Sunlight Exposed White Button Mushroom (*Agaricus bisporus*) and Oyster Mushroom (*Pleurotus ostreatus*): A Comparative Study

Tibebeselassie Keflie, Hans Konrad Biesalski

University of Hohenheim, Inst. of Biological Chemistry and Nutrition, Germany

Abstract

Vitamin D is an essential vitamin for human health, and it is mostly obtained from sunlight-induced synthesis in the skin. However, there are many factors that hinder sunlight-exposure and limit the synthesis. About one billion people in the world have vitamin D deficiency. In recent times, intake of vitamin D has attracted increasing interest, and consuming food rich in vitamin D has become more preferred. Mushrooms are valuable nutritional foods with recognised bioactive properties, leading the application of UV irradiation to the production of significant amounts of vitamin D2. The aim of the present study was, therefore, to compare the concentrations of vitamin D2 in sunlight-exposed white button mushroom (*Agaricus bisporus*) and oyster mushroom (*Pleurotus ostreatus*). Different slice sizes of mushrooms were exposed to the sunlight for different duration of time. The concentration of vitamin D2 was analysed by using high-performance liquid chromatography (HPLC). Mean, standard deviation (SD), Shapiro-Wilk test, and paired Student t-test were used for statistical analyses. The moisture content was determined in white button mushroom (93.02 %) and oyster mushroom (92.15 %). After sunlight-exposure for 30 minutes, 3 hours, and 6 hours, the mean (SD) of the concentration of vitamin D2 has become 16.62 (6.88) and 20.96 (15.42) μg/g, dry weight (DW) in 1 cm slice size; 16.04 (4.53) and 17.21 (11.14) μg/g, DW in 3 cm slice size; and 9.85 (2.90) and 15.48 (6.78) μg/g, DW in whole size of white button mushroom and oyster mushroom, respectively. The result of paired t-test revealed that there was no statistically significant difference in the mean concentration of vitamin D2 between white button mushroom (14.17 $\pm$ 5.44 μg/g, DW) and oyster mushroom (17.89 $\pm$ 10.38 μg/g, DW) ($p = 0.33$). Duration of sunlight-exposure and mushroom sizes were identified as determining factors in the production of vitamin D2. In conclusion, sunlight-exposed white button mushroom and oyster mushroom produce significant amounts of vitamin D2. Exposing such mushrooms for a brief period (less than 30 minutes) enable them to produce sufficient amounts of vitamin D2 which can satisfy the recommended dietary allowance (RDA) of vitamin D.

Keywords: Oyster mushrooms, Sunlight exposure, vitamin D2, white button mushrooms

Contact Address: Tibebeselassie Keflie, University of Hohenheim, Inst. of Biological Chemistry and Nutrition, Garbenstr.30, 70593 Stuttgart, Germany, e-mail: tibebe.fscuhoh@gmail.com