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BENEFICIAL EFFECTS OF UV-A RADIATION ON MUNG BEAN (*VIGNA RADIATA* L.) SEEDS

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Abstract

Mung bean (*Vigna Radiata* L.) seeds are an important source of both nutrients (such as proteins, fibers, vitamins) and a variety of bioactive compounds (like phenolic compounds). Ultraviolet (UV) light has an important function as a major environmental signal important for plant growth and development, but at the same time it may cause certain damaging effects on macromolecules and other cellular components. Plants respond to the production of reactive oxygen species (ROS), caused by UV irradiation, by activating changes in morphology, physiology, or production of secondary metabolites. Some of these mechanisms increase antioxidant capacity in order to reduce the harmful effect of produced ROS. In the present research, the duration of exposure to UV-A irradiation and its influence on antioxidant activity of mung bean seeds were studied. Seeds were exposed to constant irradiation for 1 or 3 hours using a UV-A lamp ($93\mu\text{W}/\text{cm}^2$) at a 50 cm distance. Antioxidant activity was tested using DPPH (2,2-Diphenyl-1-picrylhydrazyl) assay. The results indicate a significant increase in antioxidant activity of the UV-A irradiated seeds after 1 hour ($74,45\% \pm 0,40$), compared to the control ($72,85\% \pm 1,55$). After prolonged exposure, measured antioxidant activity significantly increased ($77,99\% \pm 0,71$). Our results show a correlation between duration of UV-A irradiation and the increase in antioxidant activity. This could be beneficial in agriculture for producing fortified food.

Keywords: *Mung bean seeds, UV-A, antioxidant activity.*