

## ABSTRACT

### THE EFFECT OF TOMATO (*Lycopersicum pyriforme*) JUICE ON THE PREVENTION OF PHOTOAGING OF THE SKIN AS A RESULT FROM ULTRAVIOLET-B IRRADIATION

Photoaging is caused by a lack of collagen and skin elastine fibres due to external factors such as solar UV which may give negative effects on skin, for examples, wrinkled, pigmentation spotted, low elasticity and hard textures. The process of such an early aging may be blocked or prevented by avoiding factors that may accelerate it. However, so far no explanation has suggested that the effect of tomato juice with a dosage of 11 g/kg Body Weigh may give effects on ROS activity, AP-1 expression, MMP-1 activity, type-1 collagen expression and the content of collagen in rat's skin radiated with UV-B with a dosage of 150 mJ/cm<sup>2</sup>.

The objective of this study is to understand the effect of tomato juice on the prevention of collagen damage due to the irradiation of UV-B light. The method of this research is used the number of rats was 24 divided into 4 groups consisting of 6 rat each. The control group were not irradiated with UV-B or were not given tomato juice (P<sub>0</sub>). The experimental group were given the following treatments: exposure to UV-B light of 150 mJ/cm<sup>2</sup> (P<sub>1</sub>), exposure to UV-B light of 150 mJ/cm<sup>2</sup> + giving of tomato juice with the dosage of 11 g/Kg/Body Weight (P<sub>2</sub>) exposure UV-B irradiation with the dosage of 150 mJ/cm<sup>2</sup> + combination application of lycopene, β-carotene, and vitamin C of which their content is equal with that of tomato 11 g/kg body weight (P<sub>3</sub>). Treatments were given to each group for 6 weeks. An experimental design using a cluster random with 4 treatments and 6 repetitions was employed. AP-1 and type-1 collagen expression, were measured with immunohistochemistry, the MDA content with NWLSS MDA Assay technique, and MMP-1 activity with Elisa technique and collagen content with the sircoll collagen assay technique. The data were analysed using a variance analysis and then followed with LSD Test.

It can be concluded that the application of tomato juice 11 g/kg body weight or of a combination of lycopene, β-carotene, and vitamin C of which its content equals to 11 g/kg body weight may prevent to increase the content of MDA (as indicator of ROS), AP-1 expression, and MMP-1 activity but may prevent to decrease the expression of type-1 collagen and the content of collagen in the rat skin radiated with UV-B 150 mJ/cm<sup>2</sup>. However, it also found that the application of a combination of lycopene, β-carotene, and vitamin C of which its content equals to 11 g/kg body weight may give no significant difference compared with the application of tomato juice 11 g/kg body weight.

**Key Word:** Photoaging, UV-B, MMP-1, collagen Tipe-1, and collagen