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Anti-photoaging effect of *Achatina fulica* in human skin *in-vitro*

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Background: Ultraviolet (UV) exposure causes photoaging by inducing the expression of matrix metalloproteinase-1 (MMP-1) expression. Snail *Achatina fulica* is one of the most extensively studied snails due to its economic, ecological and medical importance. Moreover, the slime is well-known for its wound-healing and anti-bacterial properties.

Objective: The research is aimed to investigate whether snail slime of *Achatina fulica* exhibits anti-photoaging properties by inhibiting the expression of MMP-1.

Method: Fifty snails were stimulated by a 9V electricity source for the extraction of slime. The extracted slime was then converted into powder form by the freeze-drying process. The slime powder was dissolved in dimethyl sulfoxide (DMSO) to desired concentrations. At the end of the experiment, the MMP-1 expression in different fibroblast groups was assessed by qPCR.

Results: Administration of snail slime has proven to lower MMP-1 expression compared to the positive control group without snail slime. However, administration of snail slime at various concentrations did not significantly produce different results. MMP-1 expression level is slightly lower in slime group compared to the Ellicina cream group at the concentration of 25 and 50 µg/mL. Administration of Ellicina cream at the concentration of 100 µg/mL has shown to lower MMP-1 expression compared to slime group at any concentration.

Conclusions: Snail slime of *Achatina fulica* reduces MMP-1 expression level on UVB-induced fibroblast culture. The potency in inhibiting MMP-1 expression level between *Achatina fulica* slime and Ellicina cream is not much different at certain concentrations.

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