

## ABSTRAK

Kedelai (*Glycine max*) telah diteliti potensi sebagai *antiaging* karena kandungan isoflavon yang bersifat sebagai antioksidan. Efek antioksidan dari isoflavon tersebut memiliki sifat antioksidan yang kuat sehingga dapat melindungi kulit dari radikal bebas. Mekanisme kerja kedelai terhadap ekspresi Matriksmetalloproteinase-1 (MMP-1) dan kolagen belum diketahui, sehingga perlu diteliti pengaruh krim ekstrak kacang kedelai terhadap MMP-1 dan rasio kolagen tipe I, III.

Penelitian eksperimental dengan *post test randomized control group design*. Dilakukan pada mencit BALB/c yang dibagi 4 kelompok. Semua kelompok dipapar sinar UVB dosis 1 MED. Kelompok kontrol (K) diolesi basis krim, sedangkan tiga kelompok lainnya diolesi krim ekstrak kacang kedelai dosis 4% (P1), 8%(P2), dan 16%(P3) segera setelah paparan sinar UVB selama 4 minggu. Ekspresi MMP-1 dihitung dari sel fibroblast yang mengekspresikan MMP-1 dengan pengecatan Immunohistokimia. Rasio kolagen tipe I/III dihitung dari perbandingan kolagen tipe I dan III. Ekspresi MMP-1 dan rasio kolagen I,III dianalisis dengan *One Way Anova* dan *post hoc* LSD pada tingkat kemaknaan  $p < 0,05$ .

Ekspresi MMP-1 pada semua kelompok K( $34,92 \pm 2,45$ ), P1( $31,08 \pm 1,56$ ), P2( $28,22 \pm 1,57$ ), dan P3( $24,72 \pm 1,26$ ) menunjukkan perbedaan bermakna ( $p < 0,05$ ). Rasio kolagen tipe I,III di kelompok K( $6,83 \pm 1,67$ ), P1( $6,02 \pm 0,98$ ), P2( $5,07 \pm 1,05$ ) dan P3( $4,23 \pm 0,27$ ) berbeda bermakna ( $p < 0,05$ ). Perbedaan rasio kolagen tipe I,III ditunjukkan antara K dengan P3 dan antara P1 dengan P3. Krim ekstrak kacang kedelai dosis 16% menghasilkan penurunan ekspresi MMP-1 dan rasio kolagen tipe I,III yang signifikan.

Dari penelitian dapat disimpulkan bahwa krim ekstrak kacang kedelai mampu menurunkan ekspresi MMP-1 dan rasio kolagen tipe I,III pada mencit BALB/c yang dipapar sinar UVB.

**Kata kunci:** Kacang Kedelai, MMP-1, Rasio Kolagen I,III

## ABSTRACT

Soybean (*Glycine max*) has been studied its antiaging potency due to antioxidant properties of isoflavone. Antioxidant of isoflavones that is strong thus could protect skin from free radicals. The mechanism action of soybean on the expression Matriks metalloproteinase-1 (MMP-1) and collagen are still unknown, so as the effect of soybean cream extract on the MMP-1 and collagen type I/ III ratio.

An experimental study with posttest randomized control group design. The study conducted in Mice BALB/c that were divided into four groups. All groups were exposed to UVB dose of 1 MED. The control group (K) applied with a cream base, while another three groups applied with soybean cream extract with dose 4% (P1), 8% (P2), and 16% (P3) immediately after UVB rays exposure for 4 weeks. Expression of MMP-1 was counted from fibroblast cells that expressed MMP-1 by immunohistochemical staining. The collagen type I,III ratio counted from the ratio of collagen type I and III. Expression of MMP-1 and collagen I,III ratio was analyzed by One Way Anova and post hoc LSD at the significance level of  $p < 0.05$ .

MMP-1 expression in all of groups K ( $34.92 \pm 2.45$ ), P1 ( $31.08 \pm 1.56$ ), P2 ( $28.22 \pm 1.57$ ), and P3 ( $24.72 \pm 1.26$ ) showed significantly different ( $p < 0.05$ ). The collagen type I,III ratio in K group ( $6.83 \pm 1.67$ ), P1 ( $6.02 \pm 0.98$ ), P2 ( $5.07 \pm 1.05$ ) and P3 ( $4.23 \pm 0.27$ ) were significantly different ( $p < 0.05$ ). Differences of collagen type I,III ratio shown between K vs. P3 and between P1 vs. P3. Soybean cream extract 16% significantly decreased MMP-1 expression and collagen type I,III ratio.

From the results could be concluded that soybean cream extract could decrease MMP-1 expression and collagen type I,III ratio in BALB/c mice that were exposed by UVB rays.

**Keywords:** Soybeans, MMP-1, Collagen I,III Ratio.