

ABSTRAK

Kacang kedelai (*glycine max*) telah diteliti memiliki potensi sebagai *antiaging*, karena kandungan isoflavon yang bersifat sebagai antioksidan. Mekanisme kerja isoflavon oral terhadap ekspresi MMP-I, kolagen dan melanin belum diketahui, sehingga perlu diteliti pengaruh fraksinasi isoflavon oral terhadap ekspresi MMP-1, ratio kolagen tipe I dan tipe III serta jumlah melanin.

Penelitian eksperimental dengan *Post test only control group design*. Dilakukan pada mencit BALB/c yang dibagi 4 kelompok secara acak. Semua kelompok dipapar sinar UVB dosis 1 MED. Kelompok kontrol (K) diberi aquabides 0,5 cc sedangkan tiga kelompok lainnya diberi isoflavon oral 10 mg (P1), 15 mg (P2) dan 20 mg (P3) bersamaan dengan paparan UVB selama 4 minggu. Ekspresi MMP-I diamati dari sel fibroblas yang mengekspresikan MMP-I. Ratio kolagen tipe I/III dihitung dari perbandingan kolagen tipe I dan III. Jumlah melanin diamati dengan adanya daerah berwarna hitam pada epidermis. Ekspresi MMP-I, ratio kolagen tipe I dan tipe III serta jumlah melanin dianalisis dengan *One Way Anovadan post hoc LSD* pada tingkat kemaknaan $p < 0,05$.

Ekspresi MMP-I pada semua kelompok K ($19,46 \pm 0,40$), P1 ($16,41 \pm 1,09$), P2 ($14,09 \pm 1,15$) dan P3 ($11,62 \pm 1,56$). Ratio kolagen tipe I dan III pada kelompok K ($2,30 \pm 0,35$), P1 ($1,71 \pm 0,18$), P2 ($1,39 \pm 0,21$) dan P3 ($0,57 \pm 0,23$) berbeda bermakna ($p < 0,05$). Jumlah melanin pada kelompok K ($151,50 \pm 17,57$), P1 ($114,67 \pm 11,66$), P2 ($48,33 \pm 7,42$) dan P3 ($31,00 \pm 3,69$). Semua kelompok menunjukkan perbedaan bermakna ($p < 0,05$). Isoflavon oral dosis 20 mg menghasilkan penurunan ekspresi MMP-I, ratio kolagen tipe I dan tipe III serta jumlah melanin yang signifikan.

Dari penelitian dapat disimpulkan bahwa isoflavon oral mampu menurunkan ekspresi MMP-I, ratio kolagen tipe I dan III serta jumlah melanin pada mencit BALB/c yang dipapar sinar UVB.

Kata kunci : kacang kedelai, isoflavon, ratio kolagen I, III, melanin

ABSTRAK

Soybean (glycine max) has been studied as having antiaging potential, due to its antioxidant isoflavone content. The mechanism action of oral isoflavones on the expression MMP-I, collagen and melanin are still unknown, so as the effect of oral isoflavone fraction on the MMP-I expression, ratio of type I and type III collagen and also the amount of melanin.

An experimental study with Post test only control group design. The study conducted in mice BALB /c that were divided into four groups. All groups were exposed to UVB dose 1 MED. The control group (K) was given 0.5 cc aquabides while the other three groups were given oral isoflavones 10 mg (P1), 15 mg (P2) and 20 mg (P3) immediately with UVB exposure for 4 weeks. Expression of MMP-I was counted from fibroblast cells that express MMP-I. The ratio of type I / III collagen is counted from the ratio of type I and III collagen. The amount of melanin can be seen by the presence of black areas in the epidermis. MMP-I expression, ratio of type I and type III collagen as well as the amount of melanin were analyzed by One Way Anova and post hoc LSD at significance level $p < 0.05$.

MMP-I expression in all groups K (19.46 ± 0.40), P1 (16.41 ± 1.09), P2 (14.09 ± 1.15) and P3 (11.62 ± 1.56). The ratio of type I and III collagen in group K (2.30 ± 0.35), P1 (1.71 ± 0.18), P2 (1.39 ± 0.21) and P3 (0.57 ± 0.23). The amount of melanin in group K (151.50 ± 17.57), P1 (114.67 ± 11.66), P2 (48.33 ± 7.42) and P3 (31.00 ± 3.69). All group showed significant differences ($p < 0.05$). An oral isoflavone dose of 20 mg results in a decrease in MMP-I expression, a ratio of type I and type III collagen as well as a significant amount of melanin.

From the result could be concluded that oral isoflavones could decrease MMP-I expression, type I and III collagen ratio and the amount of melanin in BALB / c mice that were exposed to UVB rays.

Keywords: soybean, isoflavones, collagen ratio I, III, melanin