

# **The inhibition of tyrosinase and matrix metalloproteinases of *Medicago sativa* L. (Alfalfa) by antioxidant effects**

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The study aims to search whitening agents from natural products. According to the reports, aglycones have better bioactivity than glycosides. *Medicago sativa* L. extract compared with its hydrolysates on tyrosinase activity were investigated. The inhibition activities were screened with mushroom tyrosinase.

Expression of collagenase increased in photoaging skin which led to wrinkle form. *Medicago sativa* L. extract and its hydrolysate had been screened for collagenase inhibition by fluorescent gelatin. We used DPPH assay to evaluate the scavenging free radical activity of *Medicago sativa* L. extract. In addition, Folin-Ciocalteu's phenol reagent was applied to assay the amount of the total phenol of *Medicago sativa* L. extract.

The results indicated that the inhibition of tyrosinase and collagenase of the *Medicago sativa* hydrolysate was better than that of extract. Both of *Medicago sativa* L. extract and its hydrolysate showed no cell toxicity. The scavenging free radical rate of *Medicago sativa* L. extract was 43.0% (1 mg/mL). The amount of total phenol of *Medicago sativa* L. extract was lower than 1.5%. In conclusion, the *Medicago sativa* L. hydrolysate would be a new ingredient for functional cosmetics.

Keywords: *Medicago sativa*, tyrosinase, matrix metalloproteinases, antioxidant