

國立屏東科技大學食品科學系碩士班

題目:

中文題目：植物中酪胺酸酶抑制劑相關多酚類化合物之探討

英文題目：Studies on the phenolic compounds related to tyrosinase inhibition of plants

研究生專題報告書面摘要

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摘要

酪胺酸酶為人體與植物中黑色素合成的關鍵酵素，結構上為複雜的多亞基含銅氧化還原酶，研究上普遍以抑制其酵素活性之試驗來篩選治療皮膚色素沈澱的有效成分，機制上則以抑制劑結合其活性部位，來阻止黑色素的生成。抑制劑依活性成分的結構差異可區分成競爭型、非競爭型與混合型抑制。目前市售之美白訴求的美妝產品眾多，已陸續用添加天然來源之美白成分來取代人工合成。

多酚化合物(Polyphenols)是植物中富含的抗氧化物質，類黃酮為多酚的一種，廣泛分佈在植物的各個部位中，可防止紫外線對植物體的傷害，目前已發現數種類黃酮化合物具有酪胺酸酶的抑制活性。

本研究預針對苦瓜(*Momordica charantia* L.)、紅藜(*Chenopodium formosanum*)與葛鬱金(*Maranta arundinacea* L.)等植物，探討其多酚及類黃酮等化合物的組成與含量，以及對酪胺酸酶的抑制活性，並評估其在酪胺酸酶抑制劑上的應用可能性。

關鍵字：抗酪胺酸酶、美白、多酚類化合物、類黃酮化合物、黑色素、苦瓜、紅藜、葛鬱金

Abstract

Tyrosinase, a multi-subunit copper-containing oxidase, is a critical enzyme of melanin formation in human body and plants. Some active compound for skin pigmentation curing was selected through tyrosinase inhibition. Usually, the inhibitor may combine with the active site of the tyrosinase and block the melanin production. There were three kinds of tyrosinase inhibitors based on the structure of the active site, i.e., competitive, uncompetitive and mixed type. There are enormous commercial skin care products that claims whitening effect gradually replace synthetic chemical ingredients with natural compounds.

Polyphenols are good source of antioxidants in plants. Flavonoid, being one kind of polyphenol, was found distributed widely in plants and responsible for the prevention of UV damage. Several flavonoid compounds have been found to exhibit the tyrosinase inhibition activity currently. In this study, three kinds of materials such as Bitter gourd (*Momordica charantia* L.), Djulis (*Chenopodium formosanum*) and Bermuda arrowroot (*Maranta arundinacea* L.) were used to analyze their composition of polyphenol, flavonoids, tyrosinase inhibition activity, and evaluating their possible application as tyrosinase inhibitor in the future.

Keywords: Tyrosinase inhibition, Phenolic compounds, Flavonoid compounds, Melanin, Bitter gourd (*Momordica charantia* L.), Djulis (*Chenopodium formosanum*), Bermuda arrowroot (*Maranta arundinacea* L.)

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