苦茶油精煉品質變化及其相關應用之探討

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大綱

一、前言

二、苦茶油精煉過程中3-MCPD酯類生成與抑制機制探討

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摘要

本研究透過三篇主要文獻，探討苦茶油(Camellia oil)於精煉製程中潛在有害物質3-MCPD(3-Chloro-1,2-Propanediol)酯類的生成機制與抑制策略，再進一步討論苦茶油於高溫油炸下的品質劣化分析，以及其作為藥用可注射油之具有附加價值的應用潛力。研究指出，苦茶油具備與橄欖油相似之脂肪酸結構與抗氧化成分，具有穩定性，惟於高溫脫臭階段容易生成具潛在毒性的3-MCPD酯類。研究中透過反應曲面法(Response surface methodology, RSM)優化五項精煉流程參數(脫膠水分、脫膠溫度、活性白土用量、脫臭溫度與時間)，可有效降低該3-MCPD含量達76.9%。在油炸應用方面，實驗顯示苦茶油於15小時後抗氧化成分明顯耗損，羰基價(Carbonyl value, CV)與總極性化合物(total polar compounds, TPC)值急遽上升，顯示苦茶油不宜於長時間反覆油炸。最後，研究亦證實苦茶油經過萃取、脫酸、脫色和脫臭等多重精煉程序後，其品質可達藥用注射級標準，具轉型為藥用油之潛力。由此可知，苦茶油除食用價值外，經由科學化製程設計亦具備發展高附加價值醫療用途之潛能。

關鍵字：苦茶油、3-MCPD酯類、反應曲面法、羰基價、總極性化合物

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