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• 計畫中文名稱	奈米技術開發以改善髮質健康促進劑之安定性與懸浮性		
• 計畫英文名稱	Development of Nano-technology for Improving Stability and Suspendability of Hair-health Enhancing Agents		
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• 中文關鍵字	皮脂; 頭皮屑; 微乳膠; 奈米乳膠系統; 懸浮性; 安定性		
• 英文關鍵字	Sebum; Dandruff; Microemulsion; Nanoemulsion; Suspendability; Stability; Zine pyrithione; Ketoconazole		
• 中文摘要	頭皮屑的產生、皮脂漏皮膚炎、掉髮或是容易斷髮等現象都是頭皮和頭髮常發生 的病變問題。頭皮屑的產生是因爲頭皮的角質層代謝過快而堆積成明顯可見的皮 屑，而造成頭皮代謝過快的原因與頭皮原本就存在之好油性的酵母真菌 Malassezia furfur 有關，就是橢圓型皮屑芽胞菌。因此治療的方法將以抑制其生長爲主，而目 前的產品主要是以含 zinc pyrithione 或是 ketoconazole 爲主。但 zinc pyrithione 在發展上最大的問題是粒子的大小與分散度，而 ketoconazole 的問題是其安定性。 本研究的目的即是藉由奈米技術開發以油水相乳液系統的技術製備出微米乳膠 (microemulsion) 或奈米乳膠系統 (nanoemulsion)來同時改善粒子分散懸浮性與 藥物安定度的問題。溶解度試驗的結果顯示： 100%的 1-Methyl-2-pyrrolidone(MP) 可以溶解最多量之 Zinc Pyrithion (ZP)，隨著 MP 比例的降低，含水比例的增加而減少 ZP 的溶解。40%以下之 MP 其可溶解量就小於 5mg。在評估 ketoconazole 於不同處方中之安定性實驗時發現：SLES 所組成之處方安定性較佳，如安定性試驗 I 之處方 I-2、I-3 和 I-4，而由 tween20 所組成的則安定性較差。爲了解各處方的抑 菌效果，本研究以抑菌圈的大小來判定抑菌的效果，抑菌性試驗的結果發現：處方 1-1~1-4 的抗菌效果比處方 1-5~1-7 的抗菌效果較好，這些處方都是有添加 SLES 和 Sarcosinate，在處方 2 中，處方 2-1~2-4 的抗菌效果比處方 2-5~2-7 的抗菌效果 較好，推論其抗菌效果可能和這些處方中 ZP 的溶解量有關，而處方 3 中的所有處 方都有良好的抗藥性，說明 chitosan 的吸附結合具有增加抑菌的效果。		
• 英文摘要	There have several factors could affect hair health included hair and scalp, and the most problems of them are dandruff,		

seborrhohoeic dermatitis, shedding of hair and fracturing of hair. The lipophilic yeast, Malassezia furfur, is a key contributor in the pathogenesis of seborrhohoeic dermatitis and dandruff. The most efficacious treatments of these causes are to reduce Malassezia furfur growth. Zinc pyrithione (ZP) and ketoconazole (KC) were found to be effective to the yeast, but the disadvantage of zinc pyrithione is poor suspendability and ketoconazle is subjected to slow degradation by oxidation and hydrolysis. This study was in attempt to develop nano-technology using a biphasic water and oil system to prepare microemulsion or nanoemulsion to modify the particle size and distribution of zinc pyrithione and to improve the chemical stability of ketoconazole in the dosage form. Results demonstrate that microemulsions or nanoemulsions based on SLES was not able to have enough ability to dissolve or suspend a desired amount of ZP. Attempt to increase solubility of ZP as a way to improve its dispersibility was conducted. Results show that only 1-Methyl-2-pyrrolidone (MP) has an appreciable solubility on ZP with a concentration-dependent manner in aqueous phase. However, 40 % MP aqueous solution is only able to dissolve approximately 5 mg/mL of ZP. Regarding the stability of ketoconazole, results reveal that SLES is the best to incorporated with as showed by formulations of I-2, I-3, and I4, whereas those formulations containing Tween 20 was poorer in the prevention of KC from oxidative degradation. In the study of inhibiting the growth of Malassezia furfur, it demonstrates that formulations of 1-1 to 1-4 are better than that of 1-5 to 1-7. This might be due to the presence of both SLES and Sarcosinate in those formulations. Results also reveal that formulations 2-1 to 2-4 have better inhibition on the growth of Malassezia furfur than that for those formulations of 2-5 to 2-7. This is attributed to the higher concentration of ZP could be dissolved in the former formulations. Furthermore, all formulations of 3 series possess a desirable ability to inhibit the growth of Malassezia furfur. Probably, the dissociation of ZP from those binding to chitosan is able to reach an enough extent to inhibit the growth of Malassezia furfur.