• 系統編號	RN9604-2398
• 計畫中文名稱	大白鼠組織中脂蛋白脂解脢定量法的開發及 L-3 羥基丁酸對其活性的影響
• 計畫英文名稱	Development of Fluorimetric Determination Method of Lipoprotein Lipase in Biological Samples by HPLC and the Effect of L-3-hydroxybutyrate on its
• 主管機關	行政院國家科學委員會
• 計畫編號	NSC94-2113-M038-005
• 執行機構	台北醫學大學藥學系
• 本期期間	9408 ~ 9507
• 報告頁數	11 頁
• 使用語言	中文
• 研究人員	李仁愛 Lee, Jen-Ai
• 中文關鍵字	脂蛋白脂解脢、螢光高效能液相層析法、牛血清白蛋白、糖尿病老鼠
• 英文關鍵字	Lipoprotein lipase; Fluorescence HPLC; NBD-PZ; Bovine serum albumin; STZ-induced diabetic rat
• 中文摘要	本研究發展一套以螢光偵測的高效能液相層析法以分析脂蛋白脂解脢分解高穩定性受質時所產生之游離脂肪酸。檢品的前處須經萃取步驟。干擾物質、以 NBD-PZ 衍生化之脂肪酸和參與反應的受質透過本法能完全分離。本研究並發現酵素與受質的用須加入血清白蛋白才能有效進行，實驗結果顯示檢品加入 1%的阿拉伯膠、5%的牛血清白蛋白、及去蛋白時使用乙?能使反呈現最佳化。此分析方法經過嚴密的確效試驗後，發現在測定 10 微升的老鼠血清時，準確度在 108.73 ~ 114.36%，而同日間異日間的分析標準差分別在 1.28% 及 2.91%之內，檢測極限是 4.53 nM。此法成功應用於正常與糖尿病老鼠之血漿脂蛋白脂的活性分析，進而發現糖尿病老鼠之血漿脂蛋白脂解脢活性和正常老鼠相比顯著降低 52.3%，相關機制仍需進一步探討。
• 英文摘要	We developed a highly sensitive HPLC method by using the fluorescent reagent, 4-nitro-7-piperazino-2,1,3-benzoxadiazole (NBD-PZ derivatization of oleic acid (OA) liberated after triolein being hydrolyzed by Lipoprotein lipase (LPL) without sample extraction. The derivatized fatty acids could be adequately separated from interfering peaks. The substrate for LPL was loaded in with a saturated concentration of 10 mM, and bovine serum albumin (BSA) was found to be a key factor in LPL reactions. Gum Arabic (GA) was chos for the emulsifier, but the used concentration as 1% was critical. Optimum condition for measuring the LPL activity was found when t produced OA dissolved in acetonitrile (MeCN). The accuracy values for the determination of LPL activity in 10 .mu.L of rat post hepa plasma were 108.73 ~ 114.36%, and the intra- and inter-day precision values were within 1.28% and 2.91%, respectively. The limit of

detection was about 4.53 nM. The proposed HPLC method was successfully applied to determination of LPL activity in post heparin plasma of normal and streptozotocin-induced diabetic rats associated with 52.3% reduction. The established assay system may be used determining LPL activity in different physiological and pathological conditions to clarify the relationship between LPL activity and diabetes mellitus.