

• 系統編號	RN9309-0545	
• 計畫中文名稱	子計畫四：烷基酚類清潔劑對國人主食水稻之品質及 DNA 突變之影響研究(I)	
• 計畫英文名稱	The Effect of Alkylphenol Polyethoxylates Detergent on the Quality and DNA Mutation of Rice (I)	
• 主管機關	行政院國家科學委員會	• 計畫編號 NSC91-2621-Z038-001
• 執行機構	台北醫學大學生物化學科	
• 本期期間	9108 ~ 9207	
• 報告頁數	6 頁	• 使用語言 中文
• 研究人員	鄭可大 Cheng, Kur-Ta	
• 中文關鍵字	烷基酚; 壬基苯酚; 水稻; 內分泌干擾物; 環境荷爾蒙	
• 英文關鍵字	Alkylphenol polyethoxylate; 4-Nonylphenol; Rice; Endocrine disruptor; Environmental hormone	
• 中文摘要	<p>培養基濾紙上的發芽率試驗結果顯示， NP 稀釋 200、 400 和 800 倍，水稻種子發芽率均約為 80%； OP 稀釋 200 至 800 倍，種子發芽率在 70-79%之間； NP 及 OP 稀釋 1600 及 3200 倍的種子發芽率與對照組差異不顯著。 BP 的各處理與對照組差異均不顯著。 OP 與 BP 對水的溶解度極低，對水稻種子的發芽率影響不大。在水稻苗方面， NP 稀釋 800 倍以下，明顯抑制三週大之水稻苗的生長，稀釋 1600 及 3200 倍對水稻苗的影響不大； OP 與 BP 的各處理與對照組差異均不顯著。分別以 NP 處理土壤，使之含 5、 10、 20 及 40 ppb，觀察水稻生長四個月的情形；結果得知， NP 對於水稻的結實率及稻米產量並無顯著影響，但在株高及根重方面，處理組均較對照組明顯增加，可見 NP 有促進水稻生長的作用。此外， 40 ppb NP 的處理組，較對照組及其他處理組的抽穗時間提早二至三週，可見 NP 對於水稻生理的影響，確實存在。對水稻之 BP、 OP 及 NP 殘量分析結果顯示，水稻莖部、根部及稻穀均可測得壬基苯酚的殘存；與市售的食用米比較，本實驗各組之稻穀的壬基苯酚含量，較市售米為高；其中竟以對照組的含量為最高（ 142 ppb），推測臺大人工氣候室的水源可能遭受污染，宜採水樣做進一步分析，以確定其水質。</p>	
• 英文摘要	<p>The results of Petri dish showed that the germinations of rice seed were 80% when they grew in the NP solution diluted 200, 400, and 800 folds, respectively. The germinations of rice seed were 70 to 79% when OP dilutions range from 200 to 800. There were not significantly different between the control and the treatments in 1600 and 3200 dilutions of NP or OP. Low solubility of OP and BP results in no effect of the germination of rice seed. On the growth of rice seedling, it was significantly inhibited when NP diluted no more than 800 fold. 1600 and 3200 of NP dilutions exhibited no effect on the growth of rice seedling. The treatments of OP and BP had no influence on the growth because of their low solubility. The growth of rice for four months on the soils</p>	

containing 5, 10, 20, and 40 ppb NP, respectively, were observed. The results were found that rice fertility and the seed amount of production were no difference between the control and the treatments. However, the height and the weight of root of the plants in the treatments were markedly increased than those of the control. In addition, the rice grew on the soil containing 40 ppb of NP, showed two to three weeks earlier flowering than the control. The analysis of BP, OP, and NP in the plant was also performed in this study. We found that High contents of NP were detected in the stem, root, and seed of rice which comparing with the rice sold in market. NP was also detected even in the sample of control. Water contamination is thought to be a factor, which leave for further confirmation.