乙醇與愷他命對幼鼠腦部發育的影響

劉威忠、黃玉芬、耿念慈

慈濟技術學院放射技術系、嘉義大學應用化學研究所

摘要

酒精會造成胎兒發育受損，其中以中樞神經系統對酒精最敏感，常引起胎兒腦部傷害，造成智慧不足與其他神經病變，形成胎兒酒精症候群，而酒精與愷他命常被一些懷孕婦女濫用，本研究即利用組織染色法，觀察酒精與愷他命對腦部發育的影響。

取出生後 7 與 14 天之大白鼠(rat)幼鼠 (年齡相當於人類胎兒 3 至 6 個月大) 分別給予酒精(3g/kg)、愷他命(25mg/kg)，或兩者合併使用，含對照組共 8 組，每組 5 隻幼鼠，共 40 隻，給予藥物後於次日取其腦組織進行觀察。由實驗結果得知腦部外觀實驗組與對照組沒有明顯差異，但由腦部切片發現給予酒精或愷他命造成腦細胞皺縮濃染，另外一些細胞周圍旁有神經細胞周圍空隙，顯示神經細胞出現退化，酒精雖較愷他命組有稍多的濃染細胞，但兩者差異不大，若兩者合併使用，則比單獨使用明顯增加；在海馬體 CA1 區亦有相類似的現象。

由實驗結果顯示酒精與愷他命確實會導致幼鼠的腦神經病變，尤其兩者合併使用時更加嚴重，故懷孕婦女應禁止濫用此類藥物，以保護胎兒使其組織器官能正常發育。

關鍵字：酒精、愷他命、胎兒酒精症候群

Effects of ethanol and ketamine on development of fetal brain of rats

Wei-Chung Liu、Yu-Fen Huang、Nien-Tzu Keng

Department of Radiological Technology Tzu-Chi College of Technology、Department of Applied Chemistry, National Chia-Yi University

Abstract

Alcohol is able to obstruct the development of fetus especially the central nerve system, which usually cause brain injury (e.g. retarded and nerve diseases) of the fetus (fetal alcohol syndrome). However, alcohol and ketamine are usually misused by pregnant females. In this research, we utilized histochemical staining to investigate the effects of alcohol and ketamine on the development of brain. The infant rats 7-14 days after birth (equivalent to 3-6 months of human infants) were fed with alcohol (3g/kg) and ketamine (25mg/kg) separately or both. There were 5 infants in a group and totally 8 groups including the compared group. The brain tissue of the infant was investigated the next day the drugs were fed. No apparent difference was discovered between the appearances of the experimental and the compared groups. Nevertheless, the brain cells were shriveled and high dyeing degree after fed with alcohol or ketamine. Besides, from brain slices of the experimental groups, vacant spaces were found surrounding a few nerve cells, which indicated that the nerve cells were decayed. Although more high dyeing degree cells were found in the group fed with alcohol than that fed with ketamine, the difference was negligible. Furthermore, apparently more amount of high dyeing degree cells were found in the group fed with both drugs than that fed separately. Similar phenomenon was discovered in the CA1 area of hippocampus. The results illustrated that alcohol and ketamine were capable of leading pathological changes of brain nerves. It was especially serious when both drugs were dosed. Therefore, pregnant females should avoid misusing this kind of drugs to prevent the tissue of fetus from abnormal development.

Keyword： alcohol, ketamine, fetal alcohol syndrom