

C445031 : MAJOR MEDICAL SCIENCE

KEY WORD: NITRATE/POTASSIUM NITRATE/MOUSE CHROMOSOME/SISTER CHROMATID EXCHANGE(SCE)

MALINEE PONGSAVEE : NITRATE INDUCES SISTER CHROMATID EXCHANGE IN MOUSE CHROMOSOME. THESIS ADVISOR:

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ISBN 974-584-760-7

Nitrate is the food preservative which added in the meat to prevent the growth of *Clostridium botulinum*. After nitrate is absorbed in the body, it changed to be the form of nitrosamine by metabolic activation of the body. Nitrosamine is the carcinogen. The carcinogen can change DNA in the chromosomes so the purpose of this study was to determine the effect of nitrate for inducing sister chromatid exchange (SCE). Twenty four adult male mice weighing 45-50 grams were divided into 2 groups by the difference routes of administration. The first group was treated nitrate orally by stomach tube, while the second group by intraperitoneal injection. Each group was divided into four subgroups: control, treated nitrate dose 80, 160 and 320 mg/kg.bw. After 20 days each mice subgroup was processed with sister chromatid exchange technic and observed chromosomes from mouse bone marrow under light microscope. The means SCE frequency of the oral subgroups were 182 ± 7.21 , 187 ± 6.00 , 284 ± 9.64 , 587 ± 18.68 points and the means SCE/CELL were 3.64 ± 0.14 , 3.74 ± 0.12 , 5.66 ± 0.17 , 11.72 ± 0.37 respectively. The means SCE frequency of the intraperitoneal injection subgroups were 184 ± 2.00 , 186 ± 4.58 , 226 ± 8.89 , 499 ± 21.93 points and the means SCE/CELL were 3.68 ± 0.04 , 3.71 ± 0.08 , 4.50 ± 0.16 , 9.96 ± 0.43 respectively. Comparing the groups which treated higher dose of nitrate (160 and 320 mg/kg.bw.), the mean SCE formation in oral group was higher than intraperitoneal injection group with statistically significant at $p < 0.01$ between the oral and intraperitoneal injection group. The result of this study may indicate that nitrate induces SCE in mouse chromosome of the both groups. In addition the SCE formation is increased by the raising doses of nitrate.