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# EFFECT OF HIGH SALT (SODIUM CHLORIDE) INTAKE ON FRACTURE RISK IN MALE WHITE RATS (Rattus norvegicus) An Experimental Laboratory Study

*Abstrak :*

*The past epidemiologic studies did not have definite explanation about the effect of consuming high salt (sodium chloride) on fracture risk and they just showed that high salt (sodium chloride) diet influenced bone density. The objective of this study was to explain the effect of high salt (sodium chloride) intake on fracture risk. Experimental animals used in this study were 40 three-month old male Wistar strain white rats. Those rats were randomly divided into four groups, which consisted of one control group and three treatment groups. The control group were given orally 2 ml of distilled water/200 g BW/day, while the treatment groups were subjected to three salt (sodium chloride) suspension orally of 72 mg/200 g BW/day, 144 mg/200 g BW/day and 216 mg/200 g BW/day, respectively, all of which were dissolved in 2 ml of distilled water. After 8 weeks, the bone density was measured at the metaphysial part of femoral bone of all experimental animals using ultrasound densitometry DBM Sonic 1200, the cortical width with radiograph, and the bone strength with Unconfined Compressive Strength Machine Modified. The result was subsequently presented descriptively and analyzed using multivariate analysis and discriminants analysis. It showed that all of the experimental animals with high salt (sodium chloride) intake had a significant difference from control (p < 0.05). Pairwise comparison showed that significant difference (p < 0.05) occurred between the treatment groups of 72 mg and those of 144 mg and 216 mg. The significant difference was also found between the group of 144 mg and that of 216 mg. The tests of Equality of Group Means showed that the significant difference occurred in the response of bone density, bone width and bone strength of all groups (p < 0.05). The stepwise statistics revealed that the response of bone density will appear firstly followed by the response of bone width in associated with high salt (sodium chloride) intake (p < 0.05). Linear regression analysis resulted in linear equation, showing that with increment of every 1 mg of salt (sodium chloride) administration, there would be a decrease in the sound wave velocity through the bone of about 0.478 m/second, a decrease in cortical width of about 0.001 millimeter and decrease in bone strength of*

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*about 0.416*
*Newton. In conclusion, high salt (sodium chloride) intake would cause increase in fracture risk and the increase of its*
*doses administration would be followed by further increase in fracture risk. However, further studies with different*
*methods and measurement devices are needed so as to identify the doses of salt (sodium chloride) intake that can*
*increase the fracture risk.*

*Keyword :*

*Daftar Pustaka :*

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