

CHULALAG CHOTIGASATIT : A STUDY OF THE ACTIVITY OF ERYTHROCYTE SODIUM-POTASSIUM ADENOSINE TRIPHOSPHATASE (Na-K ATPase) OF THAI MEN IN KHON KAEN PROVINCE THIS IS ADVISOR : ASSO. PROF. DR. RATREE SUDSUANG, ASSO. PROF. PIYARATANA TOSUKHOWONG, Ed. D. 75 pp. ISBN 974-579-301-9

The objective of this study was to compare the erythrocyte sodium-potassium adenosine triphosphatase (Na-K ATPase) activity from the normal male subjects who live in the Northeastern rural area of Thailand (High incidence of SUND and RSD) with the normal controls in Bangkok and we also measured Na and K content in the erythrocyte and plasma of these subjects.

Many abnormalities were found in erythrocyte of Northeastern group from these studies. Ouabain sensitive ATPase activity (Na-K ATPase) was found significantly lower in group II (25 healthy male blood donors of Khon Kaen, 52 ± 4 nmol Pi/mg.hr) and group III (30 healthy male villagers of Khon Kaen, 63 ± 3 nmol Pi/mg.hr) than in the group I (20 healthy male blood donors of Bangkok, 98 ± 5 nmol Pi/mg.hr) $P > .001$ and $P > .05$ compared to control group I. Intracellular Na concentration was higher in both group II and III (13.6 ± 0.6 and 10.5 ± 0.5 mEq/L, respectively) than group I (8 ± 0.3 mEq/L); $P > 0.001$ and $P > 0.05$ respectively. Intracellular K concentration was higher in group II and group III (99 ± 2 and 103 ± 2 mEq/L respectively) than group I (92 ± 2 mEq/L). Plasma Na in group III (145 ± 1 mEq/L) is higher than group II and group I (139 ± 1 and 139 ± 1 mEq/L respectively). Whereas no significant different in plasma K was observed. There was a strong negative correlation between erythrocyte Na-K ATPase activity or percent of Na-K ATPase as total ATPase and Na, among 3 groups ($r = -0.416$ $P < 0.0001$).

In conclusion, the erythrocytes from native residents of Northeast Thailand exhibit low Na-K ATPase activity. This might lead to a higher intracellular sodium content among Northeastern Thais. These abnormalities may be the major cause of SUND and RSD.