DETECTION AND REGULATION OF NATRIURETIC AND Na-K ATPase INHIBITOR ACTIVITIES IN THE PLASMA OF NORMOTENSIVE SUBJECTS.

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In hypertension, mainly low renin subjects, a plasma Na-K ATPase inhibitor has yet been demonstrated. Moreover, it has been established that the concentration of this activity may be modulated by variations of the sodium and water balance.

In the present study, such an activity and its role has been searched in the plasma of young healthy normotensive population. Its potential natriuretic property has also been tested.

Twenty male subjects, younger than 30, volunteered 3 very different sodium diets : normal ($\pm$ 170 mM/d), very low (- 20 mM/d) and very high sodium intake (+ 340 mM/d).

At the end of each period, some clinical and biological parameters have been studied : blood pressure, weight, vascular resistances and reactivity to norepinephrine, 24 h natriuresis, and plasma renin activity. Furthermore, the plasma natriuretic activity has been tested after filtration of the plasma across different Amicon filters to measure the effect of plasma extracts from 500 to 10000 daltons (LMW) on fractionnal sodium excretion (FE_{Na}) after injection of such extracts in vivo in rat renal artery. For detection of a plasma Na-K ATPase inhibitor activity, 1/5th diluted fresh plasma and LMW extracts have been incubated with purified rabitt renal Na-K ATPase enzyme and compared with the activity of this enzyme without such an incubation of plasma.

We have observed that when the amount of sodium in the diet is higher, weight, systolic blood pressure and vascular reactivity to norepinephrine increase. In the same condition, there are greater natriuretic activity in the LMW extracts and Na-K ATPase inhibitor activity in fresh plasma and LMW extracts of the normotensive people.

Both activities are moreover correlated ($r = 0.45$, $p < 0.05$) suggesting that these phenomenons could be at least in part due to the same substance(s). However, all the normotensives do not show the same evolution. Indeed the plasma of $\pm$ 25 % of subjects do not simultaneously present both activities of increasing the FE_{Na} and inhibiting the Na-K ATPase enzyme.

In conclusion, young normotensives present in their plasma natriuretic and Na-K ATPase inhibitor activities which are observed in the LMW extracts (500 - 10000 daltons). Such activities increase with the amount of the sodium in the diet in most but not all subjects and could explain the vascular hyperreactivity to norepinephrine noted in such condition.