

THE NUTRITIONAL PHYSIOLOGICAL STUDIES ON TASTE PREFERENCE FOR SALT

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Effects of dietary protein levels on palatability to saltiness in rats were studied in our laboratory, showing that the preferred concentration of salt depends not only on the genetic factor but also on the physiological status.

On basis of these results, the preference for ETOH in rats was also studied by means of preference test.

(1) Comparative studies of preference for ethanol (ETOH) among rat strains.

SHR (spontaneously hypertensive rat), WKY (Wistar-Kyoto), SD (Sprague-Dawley) and Wistar-slc rats were used as experimental animals. F2 diet (Funabashi Farm) was given to 4 strains of experimental animals, ad libitum. Distillated water and ETOH solution containing 5%, 10%, 15%, were prepared in water-supplying graduated tubes. The animals were allowed to drink these solutions with free choice.

Results from this study demonstrated that the cumulative ETOH intake of SHR was clearly more than that of other rats, and Wistar-slc has the least of cumulative intake. These results suggest that the preference for ETOH solution was similar tendency to salt (NaCl) in rats, and that ETOH preference in rats is possibly related to the genetic factors.

(2) The effect of dietary protein levels on the preference for ETOH. 4 strains of rats (SHR, WKY, SD, Wistar-slc) were used as experimental animals, every strain animals were divided into three groups with levels of 5%, 10%, and 15% of egg protein diets.

The preference test was performed similar to the Exp. (1). The results of this experiment shows that the cumulative ETOH intake in rats fed high protein diet (15%) is markedly more than that of rats fed lower protein diet (5%).

It was found that preference to ETOH shows the opposite tendency to that of salt (NaCl) in rats.

These results indicate that the preference response to ETOH intake possibly has some different mechanism from salt preference concerning dietary protein level in rats.

Discussion:

Results from our preliminary study showed that the plasma ETOH concentration in both groups has a peak after 30 minutes of oral administration and the level of ETOH in plasma of rats fed 15% protein diet was significantly lower than that of rat fed 5% protein diet.

This result suggested that the metabolic ability of liver for ETOH in rats fed high level of protein (15%) was possibly higher than that of rat fed low level of protein diet (5%), and it may explain the reason that rats fed higher level of protein diet has higher preference to ETOH solution.