48) Studies on the difference in body temperature between SHRSP and WKY. (the 1st report) Makoto Kumode, Hideaki Higashino, and Aritomo Suzuki. Department of Pharmacology, Kinki University School of Medicine, Osaka-fu 589.

The spontaneously hypertensive rats (SHR) whose most common condition is high blood pressure are well known to be lower body weight, earlier senility and shorter life span as compared with Wistar-Kyoto rats (WKY). The cause of hypertension with secondary organ changes has been the areas of great interest and hence well investigated, however, very few reports are available as to the conditions of low body weight and premature senility. This present study has been focused on the aspect of body temperature and calorie consumption, and metabolic changes have been observed.

The age-matched male stroke-prone SHR (SHRSP) and WKY which were bred in our laboratory for the experiments. They were fed with stock chow diet (SP made in Funahashi farm), being free access to ingestion, and we measured the quantity of the ingestion. We took their rectum temperature as body temperature by thermometer for rats. Oxygen consumption was measured by pressure change after absorbing carbon dioxide by soda lime which rats produced for 5 minutes in a container (closed circuit forced circulation type). Blood was taken from tail vessels and separated serum.

Under the condition of free ingestion, there was no remarkable difference of body weight between SHRSP and WKY until 3 months of age, but on and after 6 months of age the body weight of SHRSP was significantly lower than WKY. The free ingestive quantity per body weight was the largest at 2 months of age in both SHRSP and WKY, after that it was decreasing and it fixed after 6 or 8 months of age. The ingestive quantity of SHRSP was larger than that of age-matched WKY at every age. The rectum temperature of both SHRSP and WKY was the highest at 3 months of age and then it showed a downward trend with age. The rectum temperature of SHRSP was higher than that of WKY at every age. The cold exposure made the rectum temperature of SHRSP fallen lower than WKY. The rectum temperature of SHRSP has been fallen down only by the injection of Sulpyrine 50mg/kg, however, the injection of SHRSP-serum to WKY did not show such a effect of lowering the rectum temperature of both groups. The volume of oxygen consumption was significantly larger in SHRSP than that of WKY. There was no significant difference in thyroxine and TSH levels between these groups, but triiodothyronine level was lower in SHRSP than that of WKY.

These results suggest that hyperthermia in SHRSP is due to thermocentral impairment in central nervous system and some factors except for thyroid hormones may help to increase heat product, which will finally bring low body weight and premature senility.