31) Effect of Dilong on Blood Pressure in Spontaneous and Endothelium Derived Relaxing Factor(EDRF)-deficient Hypertension in Rats.

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Object Dilong , a traditional Chinese medicine , is the dried material of earthworm (*Lumbricus Terrestris*) . It has been used as anti-fever drug. It was reported to activate super oxide dismutase(SOD) in mice. Since SOD activation was reported to reduce blood pressure, dilong may affect not only body temperature but also hypertension. In this report, we examined the effect of dilong on spontaneous and EDRF deficient hypertensions.

Materials and methods Experiment 1: Twenty-eight male stroke prone SHR(SHRSP) were divided into two groups : one was fed on 30% dilong containing diet (30% dilong + 70% SP diet) and the other was given plain SP diet (Funabashi SP, Chiba Japan). Indirect blood pressure by using a tail-pulse photo sensor method (UR 1000 ; UEDA Tokyo Japan) , body weight and body temperature by using a digital thermometer (Model 49TA Yellow Spring Instrument co; Inc U.S.A) were measured at regular intervals. Experiment 2 : A total of 15 male normotensive Wistar Kyoto rats(WKY) were divided into three groups, according to the following dietary conditions , 30% dilong + 0.023% NG-nitro-L-arginine(L-NNA; peptide institute Oosaka Japan), 30% kaolin+0.023% L-NNA and 30% dilong in SP diet . Blood pressures were checked on the 3 , 7 and 10th days .

Results The development of severe hypertension was significantly ($p < 0.05$ or $p < 0.01$ t-test) suppressed by dilong contained diet SHRSP for 11 weeks after the administration. Concomitantly body temperature in these SHRSP fed on dilong contained diet was significantly ($p < 0.05$ or $p < 0.01$ t-test) lowered than SHRSP on SP diet during experimental period. There was no difference in body weight between these two groups of SHRSP. The elevation of blood pressure in WKY induced by L-NNA was significantly ($p < 0.05$ ANOVA) attenuated by the feeding of 30% dilong during treated period.

Conclusion with discussion In this experiment , the attenuation of hypertension as well as the decrease in body temperature by dilong feeding were observed. It has been reported that EDRF plays important role in the maintenance of blood pressure in human and animal models . And our previous report showed that chronic administration of EDRF/NO synthesis inhibitor induced hypertension and severe malignant hypertension in normotensive rats and SHRSP. Moncada et al documented that SOD protected EDRF(Nature Vol 320 3 April 1986) . Nakazono et al observed a decrease in blood pressure by a fusion protein consisting of human Cu/Zn-type SOD in SHR(Proc. Natl. Acad. Sci. USA Vol.88 10045, Nov. 1991) . Our presented results suggest the attenuation of hypertension in SHRSP and EDRF-deficient hypertension by some components of dilong may be due to its reported SOD activation effect .