Canola oil toxicity in SHRSP — possible involvement of RAS —

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In the present study, we examined if renin-angiotensin system (RAS) is involved in the Canola oil (C)-induced toxicity in male SHRSP.

Methods: Male SHRSPs were given AIN-93G diets containing 10w/w% soybean oil (S, control) or C and tap water ad libitum for 8 weeks, sacrificed, and plasma renin and angiotensin II concentrations, and ACE activities in the kidney and lung were determined. In addition, mRNA expressions for renin in the kidney, angiotensinogen in the liver, ACE in the lung and ACE2 in the testis were examined.

Results and Discussion: Both renin and angiotensin II concentrations in C group, 753 ± 97 and 66.9 ± 6.5 pg/mL were higher than respective those in S group, 459 ± 23 and 46.4 ± 5.5 pg/mL ($p < 0.01$, $N=12$ and $p < 0.05$, $N=10$). Expressions of mRNA for renin in the kidney was significantly high and ACE2 in the testis was low in C group comparing with S group, while ACE in the lung and angiotensinogen in the liver were comparable. Thus the enhanced production of renin in the kidney and increased plasma angiotensin II level lead to the acceleration of blood pressure elevation and vascular injuries, and may be involved in the C toxicity. ACE2 may also be concerned via steroid hormone metabolism.