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Effect of Glucocorticoid on Expression of Rat MUC5AC mRNA in Rat Gastric Mucosa *in Vivo* and *in Vitro*

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The regulation of rat MUC5AC (rMUC5AC) mRNA by glucocorticoid *in vivo* and *in vitro* was investigated, comparing it with that of pepsinogen (Pg) mRNA. By adrenal gland resection, rMUC5AC and Pg mRNA levels and Pg content in rats significantly decreased to 70%, 46% and 42% of those in the sham operated controls, respectively. With the treatment of hydrocortisone (1, 5 and 50 mg/kg), Pg mRNA level and Pg content in adrenalectomized rats was restored. On the other hand, the rMUC5AC mRNA level exceeded the control with 1 or 5 mg/kg injections of hydrocortisone, but drastically decreased to 18% of sham operation levels with it (50 mg/kg). Similar results were obtained in normal rats with the treatment of hydrocortisone (50 mg/kg). Mucus and DNA content of cultured rat gastric epithelial cells were not affected by hydrocortisone, but rMUC5AC mRNA level was significantly decreased in a dose-dependent manner.

From the *in vivo* and *in vitro* results, at least a physiological concentration of glucocorticoid was necessary in the expression of rMUC5AC mRNA. However, high dose of hydrocortisone directly suppressed the expression of rMUC5AC mRNA. These results suggested that hydrocortisone might directly cause the suppression and indirectly the enhancement of the mucin biosynthesis.