

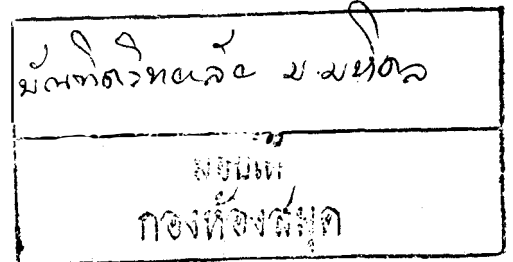
MOLECULAR ALTERATIONS OF URINARY HCG  
FROM HYDATIDIFORM MOLE

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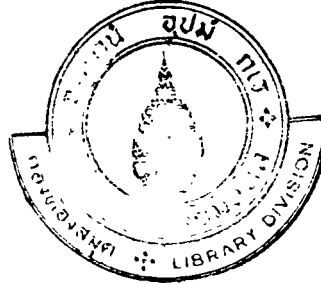
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ABSTRACT

Human chorionic gonadotropin (HCG) is a glycoprotein hormone normally secreted into serum and urine by human placenta during pregnancy. The hormone produced in hydatidiform mole disease, an abnormal proliferation of placental trophoblastic cells, has been found differing from normal hCG in many biochemical properties. The present investigations were undertaken to explore whether the molar hCG would be distinguishable from normal hCG by simple biochemical methods regarding to their differences in molecular charges and sizes. The method may be useful in helping early diagnosis of the disease.

Molecular charges of urinary hCG from normal and molar pregnancies were compared under non-denaturing condition using Tandem-crossimmuno-electrophoresis in Tris-glycine buffer (pH 8.6) and the intact hCG was detected by complementary rabbit anti-hCG. Samples from 10 patients showed significantly slower electrophoretic mobilities of molar hCG than normal hCG indicating less negative charge of the former. However, molar hCG was immunochemically identical to normal hCG. Therefore, the abnormality of this hormone might be due to variation in carbohydrate moiety.

Molecular sizes of normal and molar hCG were also compared by SDS-polyacrylamide gel electrophoresis. The hormones were detected by immunofluorescence or immunoperoxidase after being transferred to a nitrocellulose paper. The molecular size of normal hCG was found to be



homogeneous (apparent molecular weight 52,000) whereas additional small immunoreactive hCG (apparent molecular weight 43,000) was observed in some hydatidiform mole urines. Moreover, a small molecular size immunoreactive hCG-like substance (apparent molecular weight 17,000) was present in both normal and molar urines. The intact hCG was dissociated into two non-identical subunits ( $\alpha$ , $\beta$ ), electrophoresed in SDS-PAGE and determined their molecular sizes separately using specific antiserum corresponding to either subunit. The small hCG from hydatidiform mole possessed identical  $\alpha$  subunit to, but smaller  $\beta$  subunit than, that of normal hCG. The present studies suggested that the heterogeneities observed from molar hCG might reside on the  $\beta$  subunit.