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ISOLATION AND PURIFICATION OF HUMAN CHORIONIC GONADOTROPINE (HCG) FROM THE URINE OF PREGNANT WOMEN

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Human chorionic gonadotropine (hCG) is used as a medicine in several diseases like infertility of men and women. This hormone is excreted by urine. At the present time, isolation of hCG from urine is the only way for preparation of this hormone. The highest concentration of hCG in urine

and serum is in the early second trimester of pregnancy.

Finding the best method for isolating of hCG from urine and finally its purification is the purpose of this study.

There are several methods for isolation of this hormone from urine. In this study, the adsorption method (adsorption on benzoic acid crystals), precipitation method (precipitation by cold acetone) and ultrafiltration (flat membrane) are compared. The purification processes of hCG were done by ion exchange chromatography (DEAE Sephadex A50) and Gel filtration (Sephadex G100) respectively. Purified hCG was identified by western Blotting technique. The purity and molecular weight of purified hormone was determined by SDS-PAGE technique. Sialic Acid was identified on intact hormone and its subunits by sialic acid identification kit on membrane. The molar extinction coefficient in distilled water and dissociation rate constant at 25°C (pH=2) were determined.

The yields of different isolation methods were 56.6%, 88.6% and 92.3% for adsorption, precipitation and ultrafiltration methods respectively. The molecular weight of purified hormone and its subunits were approximately 50,000, 30,000 and 20,000 Dalton. The molar extinction coefficient was determined to be 10420. The potency of purified hormone was approximately 17560 IU/mg by immunologic methods.

Keyword: Human chorionic gonadotropine (hCG), Purification, Ion exchange chromatography, Gel, Ultrafiltration, western Blotting technique, SDS-PAGE

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