

Description

Human chorionic gonadotropin (hCG), a polypeptide hormone produced by the human placenta, is composed of an alpha and a beta subunit. The alpha sub-unit is essentially identical to the alpha subunits of the human pituitary gonadotropins, Luteinizing hormone (LH) and follicle-stimulating hormone (FSH), as well as to the alpha subunit of human thyroid-stimulating hormone (TSH). The beta subunits of these hormones differ in amino acid sequence.

Pubergen-HP [chorionic gonadotropin] for injection IP is a highly purified preparation obtained from the urine of pregnant females. Analysis of the protein contents and other materials used in the formulation is carried out as per the pharmacopoeial procedures of IP [bio-assays].

Clinical Pharmacology

The action of hCG is often referred to be virtually identical to that of pituitary LH, although hCG appears to have a small degree of FSH activity as well. It stimulates production of gonadal steroid hormones by stimulating the interstitial cells (Leydig cells) of the testes to produce androgens and the corpus luteum of the ovary to produce progesterone.

In males, androgen stimulation leads to the development of secondary sex characteristics and stimulates testicular descent, when no anatomical obstructions are present. This descent is usually reversible when hCG is discontinued.

In females, during the normal menstrual cycle, LH participates with FSH in the development and maturation of the normal ovarian follicle, and the mid-cycle LH surge triggers ovulation. hCG can be an ideal substitute for LH in triggering ovulation. In normal pregnancy, in the early stages, hCG is secreted by the syncytiotrophoblast which later develops into the placenta maintaining secretion of hCG for continuation of pregnancy after LH secretion decreases. Along with the continual endogenous secretion of estrogen and progesterone, menstruation is prevented.

Although claims regarding the efficacy of hCG in treating obesity have been made, hCG has no known effect on fat mobilization, appetite or sense of hunger, or body fat distribution.

Indications And Usage

1. **Induction of Ovulation and Pregnancy** [anovulatory, infertile] woman in whom the cause of anovulation is secondary and not due to primary ovarian failure, and who has been appropriately pretreated with human menotropins
2. **Prepubertal Cryptorchidism**[not due to anatomical obstruction]
hCG induces testicular descent in situations when descent would have occurred at puberty. hCG thus may help predict whether or not orchiopexy will be needed in the future. Although, in some cases, descent following hCG administration is permanent, in most cases, the response is temporary. Therapy is usually instituted in children between the ages of 4 and 9
3. Selected cases of hypogonadotropic hypogonadism (hypogonadism secondary to a pituitary deficiency) in males

Contraindications

Precocious puberty, prostatic carcinoma or other androgen-dependent neoplasm, prior allergic reaction to hCG

Warnings

HCG should be used in conjunction with human menopausal gonadotropins only by physicians experienced with infertility problems who are familiar with the criteria for patient selection. The Physician must be well aware of the contraindications, warnings, precautions, and adverse reactions for menotropins.

Anaphylaxis has been reported with urinary-derived hCG products. Adverse reactions associated with the use of hCG are

1. OHSS [Ovarian Hyper-stimulation Syndrome] resulting in sudden ovarian enlargement, ascites with or without pain, and/or pleural effusion
2. Rupture of ovarian cysts with resultant hemoperitoneum
3. Multiple births, and
4. Arterial thromboembolism

Precautions

- ⚠ General - In patients with cardiac or renal disease, epilepsy, migraine, or asthma, as androgens may cause fluid retention, hCG should be used with Caution.
- ⚠ Pediatric Use - Induction of androgen secretion by hCG may induce precocious puberty in pediatric patients treated for cryptorchidism. Therapy should be discontinued if signs of precocious puberty occur.
- ⚠ Geriatric Use - No clinical studies have been conducted in individuals aged over 65 years.

Adverse Drug Reactions

- ⚠ Headache, irritability, restlessness, depression, fatigue, edema, precocious puberty, Gynecomastia, pain at the site of injection
- ⚠ Pain, redness, rashes, and irritation have been reported at the site of injection
- ⚠ Although rare systemic hypersensitivity reactions have been reported in some individuals

Dosage And Administration

The dosage regimen used in any particular clinical condition will depend on the age and BMI of the patient and the physician's preference. The following regimens are being routinely used for the following conditions:

- i. Induction of ovulation and pregnancy in the anovulatory, infertile woman in whom the cause of anovulation is secondary and not due to primary ovarian failure and who has been appropriately pretreated with human menotropins [FSH or HMG] - 5000 to 10,000 IU 24 hrs after the last dose of menotropins
- ii. Prepubertal cryptorchidism not due to anatomical obstruction. Therapy is usually instituted in children between the ages of 4 and 9
 - ⚠ 4000 IU; 3 times weekly for 3 weeks
 - ⚠ 5000 USP units every second day for 4 injections
 - ⚠ 15 injections for 500 to 1000 USP units over a period of 6 weeks

△ 500 USP units 3 times weekly for 4 to 6 weeks. If this course of treatment is not successful, another course of treatment 1 month later, giving 1000 USP units per injection.

iii. Hypogonadotropic Hypogonadism in Males

△ 500 to 1000 IU thrice weekly x 3 weeks, followed by the same dose twice a week for 3 weeks

△ 4000 IU thrice weekly for 6 to 9 months, followed by a reduced dosage of 2000 IU thrice weekly for an additional 3 months

The drug must be administered intramuscularly.

Directions for Reconstitution

Each mono-carton contains 1. a vial of the sterile lyophilized active drug powder for injection and 2. an ampoule of diluent for dissolving the active drug. Prior to injection, it is advisable to bring the diluent to room temperature and snap the head and withdraw the diluent with a sterile needle and syringe and add slowly to the vial containing the active drug after removing the clip of seal. Prior to injecting the drug, inspect the reconstituted solution for any particulate matter or discoloration. If seen, discard the solution immediately. Do not shake or stir vigorously as this may render the drug inactive.

Any remaining reconstituted solution must be discarded immediately and should not be stored for later use.

Disposal

1. Used Vial & Ampoule – The glass vial and ampoule must be disposed as per the bio-hazard guidelines to ensure that there is no injury or usage of the discarded vial.
2. Used Syringe & Needle – To prevent reuse of the syringe and needle, the needle must be destroyed as per the bio-hazard guidelines and the plunger be separated from the syringe to prevent reuse.

How Supplied

Each Mono-carton contains a sterile lyophilized vial with a clip of seal of the active drug hCG along with an ampoule that can be snapped easily at the marking provided along with prescribing information and directions to use.

The injections are available in strengths of 1000/2000/5000 and 10000 IU for injection only.

Storage

The carton must be stored at the ambient temperature mentioned on the carton which is between 18-20°C. Do not use the drug if not stored at ambient temperature as the drug may have been rendered ineffective.