SPECIALTY

HMG (Human Menopausal Gonadotropin)

hMG, Pergonal, Menotropin, Menopur, hCG/FSH combination

CAS Number	9002-71-5 (FSH), 9002-68-2 (LH)
Molecular Formula	Peptide mixture
Molecular Weight	34-40 kDa (FSH and LH)
Category	Specialty
Available Specifications	75 IU vial, 150 IU vial, 75 IU x 10 vial kit, 150 IU x 10 vial kit

1. OVERVIEW

HMG is a hormone preparation derived from the urine of postmenopausal women containing follicle-stimulating hormone (FSH) and luteinizing hormone (LH) in approximately 1:1 ratio. It acts as a direct gonadotropin replacement for ovulation induction, spermatogenesis support, and IVF protocols.

2. MECHANISM OF ACTION

HMG operates through direct gonadotropin receptor activation: (1) FSH binds to FSH receptors on granulosa cells, stimulating folliculogenesis and estrogen production; (2) LH binds to Leydig cells (testes) and theca cells (ovary), stimulating steroidogenesis; (3) promotes development of secondary sexual characteristics; (4) stimulates gametogenesis (oogenesis and spermatogenesis); (5) synergistic FSH-LH activity optimal for reproduction.

3. CLINICAL EVIDENCE & RESEARCH

Extensive clinical data on use in infertility treatment. FDA-approved for ovulation induction in anovulatory women and spermatogenesis stimulation. Clinical trials document pregnancy rates of 20-50% depending on etiology. Evidence supports efficacy in primary and secondary infertility.

4. THERAPEUTIC BENEFITS

- Direct ovulation induction
- Spermatogenesis stimulation
- IVF cycle support and controlled ovarian hyperstimulation
- Treatment of hypogonadotropic hypogonadism
- FDA-approved for fertility indications
- Well-established safety profile
- Dosing flexibility and protocol adaptation
- High success rates in appropriate populations

5. INDICATIONS

- Anovulation and ovulatory dysfunction (women)
- IVF and assisted reproductive technology
- Hypogonadotropic hypogonadism (men and women)
- Spermatogenesis induction (male infertility)
- Oocyte retrieval cycles
- Controlled ovarian hyperstimulation

- Secondary infertility
- Fertility preservation protocols

6. DOSING & ADMINISTRATION PROTOCOL

Indication	Dose	Route	Frequency	Duration
Ovulation induction	75-150 IU daily	IM injection	Daily	7-14 days
IVF stimulation	150-450 IU daily	IM or SC injection	Daily	8-14 days
Male hypogonadism	75-150 IU 3x weekly	IM injection	Three times weekly	Months/years
Spermatogenesis induction	75-150 IU 3x weekly	IM injection	With hCG	6-12 months

Reconstitution

HMG supplied as lyophilized powder in vials (typically 75 IU or 150 IU per vial). Reconstitute with sterile diluent supplied with medication. Mix gently; do not shake vigorously. Reconstituted solution use immediately or store per protocol.

Administration

Intramuscular injection (gluteus medius or vastus lateralis). Subcutaneous injection alternative available. Inject reconstituted solution using sterile technique. Rotate injection sites with repeated dosing. Daily injections required for ovulation induction and IVF cycles.

Protocol Notes

Requires careful monitoring of follicular development via ultrasound and serum estradiol. Trigger injection (hCG 5000-10,000 IU) when dominant follicle(s) mature. Multiple drug formulations available (urinary HMG, recombinant FSH+LH combinations). Cost significant; insurance coverage variable.

7. SIDE EFFECTS & SAFETY PROFILE

- Ovarian hyperstimulation syndrome (OHSS) - most serious
- Abdominal bloating and pain
- Mild headache and mood changes
- Injection site reactions (pain, bruising)
- Nausea
- Breast tenderness
- Dizziness
- Risk increases with higher doses or high response

8. CONTRAINDICATIONS & PRECAUTIONS

- Primary ovarian failure
- Uncontrolled thyroid or adrenal disease
- Intracranial lesions
- Allergy to HMG components
- Pregnancy (stimulation contraindicated)
- Active infection
- Uncontrolled diabetes
- High risk for thrombosis

Drug Interactions

No major pharmacokinetic interactions. May have additive effect with GnRH agonists/antagonists. Avoid other ovulation-inducing agents concurrently. Careful monitoring required with anticoagulant therapy.

9. STORAGE & HANDLING

Store lyophilized vials at 2-8°C. Protect from light. Reconstituted solutions use immediately or store at 2-8°C and use within 24 hours. Do not freeze reconstituted product. Check expiration before use.

10. KEY REFERENCES

1. Fauser, B.C., et al. (2005). "Contemporary genetic technologies and female reproduction." Human Reproduction Update, 11(3), 263-287.

2. Daya, S. (2010). "Gonadotropin-releasing hormone agonist protocols for pituitary suppression in assisted reproduction." Cochrane Database of Systematic Reviews, 1, CD006919.

3. Lobo, R.A., et al. (2012). "Comprehensive Gynecology (5th ed.). Mosby: Reproductive endocrinology section."