

HORMONES[®]

& OTHER RELATED SUBSTANCES

What are they?

Peptide and glycoprotein hormones are natural substances that act as 'messengers' within the body and cause the production of other endogenous hormones like testosterone and (cortico)steroids. The effect is that growth increases and/or pain is reduced. Analogues are man-made synthetic drugs, which have similar effects to peptide hormones. EPO, hGH, Gonadotrophins, Insulin and Corticotrophins belong to this class.

How would they be used to cheat in sport?

ErythroPOietin (EPO)

This hormone increases the number of red blood cells (erythrocytes) in the blood and increases the amount of oxygen the blood can carry to the muscles. EPO may be used to perform better in endurance performances.

Human Growth Hormone (hGH)

This is a pituitary hormone and is necessary for normal growth of children; athletes may use growth hormone to increase muscle size and strength.

Insulin Growth Factors (IGF-1)

This stimulates protein synthesis and reduces muscle cell breakdown leading to an increase in muscle bulk and reduced body fat which are effects that assist an athlete.

Human Chorionic Gonadotrophin (hCG)

This hormone increases production of endogenous steroids and may be used as it increases muscle size and strength when the athlete is in strength training. This can also be used as a masking agent. This is prohibited in men only.

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Insulin

This is used in the treatment of diabetes and is a hormone used to promote metabolism of carbohydrates, fats and proteins. In combination with anabolic steroids and/or growth hormone it can increase muscle growth and improve muscle definition.

Corticotrophins –

Adreno Cortico Trophin Hormone (ACTH)

This hormone increases the level of endogenous corticosteroids. ACTH may be used to repair damaged tissues and muscles. If used for long periods of time it would cause muscle wasting.

Potential harmful side effects

EPO:

- Increased viscosity, 'thickness', of the blood
- High blood pressure (hypertension)
- Myocardial infarction
- Cerebral infarction
- Blood clots in the lungs (pulmonary embolism)
- Convulsions

hGH:

- Abnormal growth of hands, feet and face (acromegaly)
- Abnormal growth of internal organs, e.g. liver
- Joint disorders (arthropathies)
- Diabetes mellitus
- Cardiovascular diseases, e.g. high blood pressure (hypertension)

IGF-1

- Low blood sugar
- Abnormal growth of hands, feet and face (acromegaly)
- Headaches joint pains
- Musculoskeletal changes

hCG:

- Breast development (in males)(gynaecomastia)
- Menstrual disorders (in women)

Insulin

- Low sugar level
- Shortness of breath
- Drowsiness
- Coma
- Brain damage

ACTH:

- Sleeping problems (insomnia)
- High blood pressure (hypertension)
- Diabetes mellitus
- Stomach ulcer
- Poor healing of wounds
- Loss of bone mass (osteoporosis)

What else you should know

Erthropoietin, Growth Hormone, Insulin-like Growth Factors, Mechano Growth Factors, Gonadotrophins (Male Only), Insulins and Corticotrophins and other substances with similar chemical structure or similar biological effect(s) are prohibited in-competition and out-of-competition.

In some countries the possession of these hormones is illegal under national legislation and could lead to a fine or imprisonment.

This fact-sheet is deliberately concise

For further information **contact the Anti Doping Unit**, Irish Sports Council, Top Floor, Block A, Westend Office Park, Blanchardstown, Dublin 15.
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