

OCR (B) Biology GCSE

Topic B5.5: What role do hormones play in human reproduction?

Flashcards

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What is the menstrual cycle?



What is the menstrual cycle?

The cycle in women (typically lasting 28 days) that involves:

- Shedding of uterus lining (menstruation)
- Repair of uterus lining
- Release of an egg (ovulation)
- Maintenance of uterus lining



Describe the stages of the menstrual cycle



Describe the stages of the menstrual cycle

- **Days 1-4:** if fertilisation and implantation do not occur the uterus lining sheds and the egg is expelled with it (menstruation)
- **Days 4-14:** uterus lining thickens and blood vessels grow in preparation for the implantation of an egg
- **Day 14:** egg released from a follicle into the oviduct (ovulation)
- **Days 14-28:** uterus lining maintained so implantation can occur



Why are hormones important in sexual reproduction?



Why are hormones important in sexual reproduction?

- Control the development of gametes
- Control the stages of the menstrual cycle



Name the hormones that control the menstrual cycle (4)



Name the hormones that control the menstrual cycle
(4)

- Follicle stimulating hormone (FSH)
- Oestrogen
- Luteinising hormone (LH)
- Progesterone



Describe the role of FSH in the
menstrual cycle (**higher**)



Describe the role of FSH in the menstrual cycle (higher)

- Secreted by the pituitary gland
- Transported in the bloodstream to the ovaries
- Triggers the development of a follicle in the ovaries which releases oestrogen



Describe the role oestrogen plays in the menstrual cycle (higher)



Describe the role oestrogen plays in the menstrual cycle (**higher**)

- Secreted by the ovaries
- Repairs and thickens the uterus lining
- Inhibits secretion of FSH from the pituitary gland
- Stimulates secretion of LH from the pituitary gland



Describe the role of LH in the menstrual cycle (higher)



Describe the role of LH in the menstrual cycle (higher)

- Secreted by the pituitary gland
- Transported in the bloodstream to the ovaries
- Surge in LH triggers ovulation
- Stimulates follicle remains to develop into a corpus luteum which then secretes progesterone



What is a corpus luteum? (higher)



What is a corpus luteum? (higher)

- Temporary endocrine structure
- Mass of cells that releases progesterone
- Degenerates after a few days



Describe the role of progesterone in the menstrual cycle (**higher**)



Describe the role of progesterone in the menstrual cycle (**higher**)

- Secreted by the corpus luteum
- Stimulates the growth of blood vessels in the uterus lining (in preparation for implantation)
- Inhibits the release of FSH and LH
- If no implantation occurs, progesterone levels decrease and the uterus lining sheds. FSH increases and the cycle starts again.



What happens to progesterone levels if fertilisation and implantation occur?
(higher)



What happens to progesterone levels if fertilisation and implantation occur? (**higher**)

The placenta produces progesterone so levels remain high. This prevents further ovulation and maintains the uterus lining.



What are contraceptives?



What are contraceptives?

A method or device utilised to prevent pregnancy



Which hormones can be taken to prevent pregnancy?



Which hormones can be taken to prevent pregnancy?

- Progesterone taken on its own
- Progesterone combined with oestrogen



Outline how progesterone can be administered as a contraceptive (4)



Outline how progesterone can be administered as a contraceptive (4)

- Injection (lasts 3 months)
- Implant under the skin (lasts 3 years)
- Intrauterine system, IUS (lasts 3-5 years)
- Mini-pill taken daily



What is an intrauterine system (IUS)?



What is an intrauterine system (IUS)?

A plastic device (T-shaped) inserted into the uterus which releases progesterone



Outline how progesterone and oestrogen can be administered as a contraceptive (4)



Outline how progesterone and oestrogen can be administered as a contraceptive (4)

- Combined pill
(taken continuously for 21 days then paused for 7 days)
- Skin patch
(worn continuously for 3 weeks then without for 1 week)



How does progesterone prevent pregnancy? (3)



How does progesterone prevent pregnancy? (3)

- Sperm find it more difficult to enter the uterus as the cervical mucus is thicker
- Thins the uterine lining, reducing the likelihood of egg implantation
- Prevents ovulation in some women (but not all)



How does oestrogen prevent pregnancy?



How does oestrogen prevent pregnancy?

Oestrogen inhibits FSH, preventing ovulation.



What are the benefits of hormonal contraceptive methods? (4)



What are the benefits of hormonal contraceptive methods? (4)

- 99% effective when used properly
- Some hormones can reduce the risk of certain cancers
- Generally longer lasting than non-hormonal methods
- Used to treat other conditions e.g. painful/heavy periods



What are the risks of hormonal contraceptive methods? (4)



What are the risks of hormonal contraceptive methods? (4)

- Side effects e.g. mood changes, acne, bloating
- Do not protect against STIs
- May involve uncomfortable medical procedures
- Not effective if used incorrectly



Outline the non-hormonal contraceptive methods (6)



Outline the non-hormonal contraceptive methods (6)

- Barrier - condoms, diaphragm (fits over cervix)
- Intrauterine device, IUD
- Using spermicidal agents which kill sperm
- Abstaining from intercourse when most fertile
- 'Withdrawal' method
- Sterilisation - surgical procedure that blocks the fallopian tubes or cuts the sperm ducts



What is an intrauterine device (IUD)?



What is an intrauterine device (IUD)?

A plastic and copper T-shaped device inserted into the uterus



How does an IUD prevent pregnancy?



How does an IUD prevent pregnancy?

- Copper alters the consistency of cervical mucus, making it difficult for sperm to enter the uterus
- It can also prevent implantation of an egg



What are the benefits of non-hormonal contraceptive methods? (5)



What are the benefits of non-hormonal contraceptive methods? (5)

- Condoms are simple and quick to use
- Condoms prevent the spread of STIs
- IUDs are 99% effective and last a long time (5-10 years)
- Sterilisation methods are 99% effective and permanent
- Generally no side effects



What are the risks of non-hormonal contraceptive methods? (5)



What are the risks of non-hormonal contraceptive methods? (5)

- Fitting a diaphragm or an IUD may be uncomfortable
- Risk of an ectopic pregnancy with an IUD
- Natural methods are not very effective
- Condoms can split whilst in use
- Surgical procedures cannot be reversed if a person changes their mind



Describe how hormones can be used to
treat infertility (higher)



Describe how hormones can be used to treat infertility (**higher**)

FSH and LH injections increase the probability of pregnancy:

- FSH stimulates the maturation of follicles
- LH causes ovulation



Describe the role of hormones in IVF
(higher)



Describe the role of hormones in IVF (higher)

- 1. FSH and LH given to a woman to stimulate egg production and ovulation**
2. Eggs retrieved from the woman's ovaries and fertilised in vitro
3. Resultant embryo transferred to the woman's uterus

