

Contraception

Humans have many ways in which to manage their own reproduction. They may choose to prevent or assist fertilization. **Contraception** refers to the use of methods or devices that prevent conception (fertilization of an egg by a sperm). There are many contraceptive methods available including physical barriers (such as condoms) that prevent egg and sperm ever meeting. The most effective methods (excluding sterilization) involve chemical

interference in the normal female cycle so that egg production is inhibited. This is done by way of **oral contraceptives** (below, left) or hormonal implants. If taken properly, oral contraceptives are almost 100% effective at preventing pregnancy. The placement of their action in the normal cycle of reproduction (from gametogenesis to pregnancy) is illustrated below. Other contraceptive methods are included for comparison.

Hormonal Contraception

The most common method by which to prevent **conception** using hormones is by using an oral contraceptive pill (OCP). These may be **combined OCPs**, or low dose mini pills.

Combined oral contraceptive pills (OCPs)

These pills exploit the feedback controls over hormone secretion normally operating during a menstrual cycle. They contain combinations of synthetic **estrogens** and **progesterone**. They are taken daily for 21 days, and raise the levels of these hormones in the blood so that FSH secretion is inhibited and no ova develop. Sugar pills are taken for 7 days; long enough to allow menstruation to occur but not long enough for ova to develop. Combined OCPs can be of two types:



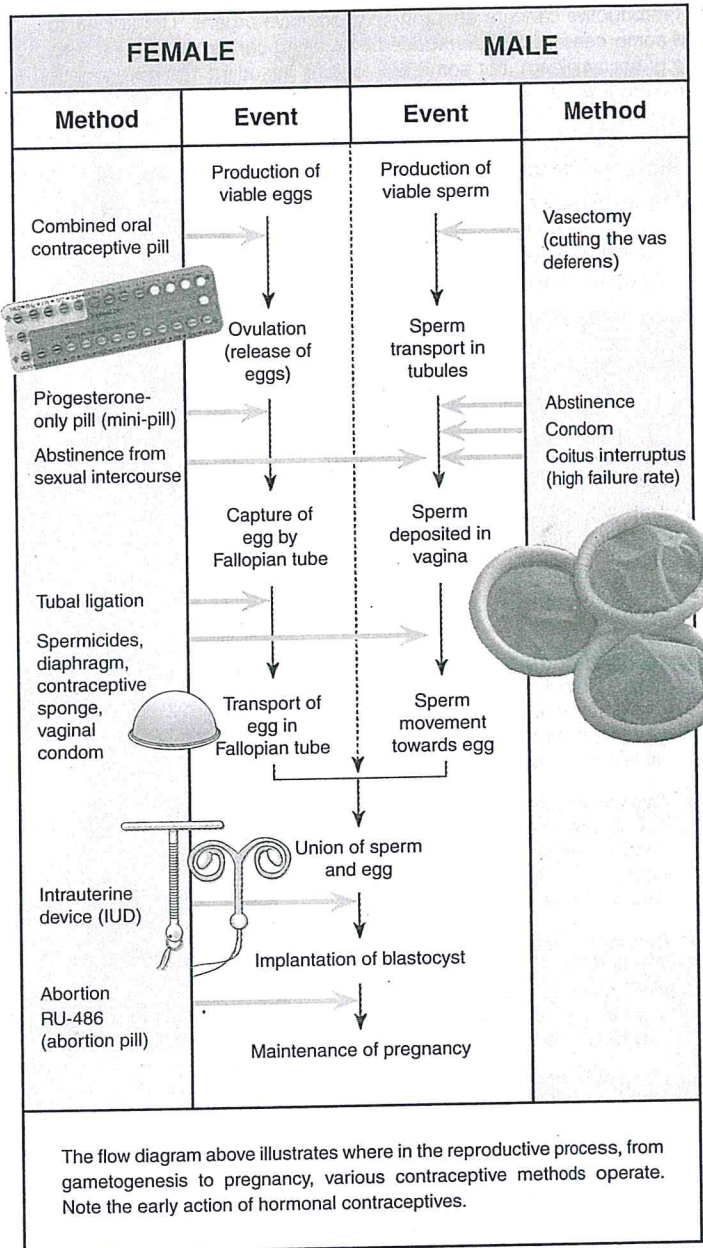
Monophasic pills (left): Hormones (H) are all at one dosage level. Sugar pills (S) are usually larger and differently colored.



Triphasic pills (right): The hormone dosage increases in stages (1,2,3), mimicking the natural changes in a menstrual cycle.

Mini-pill (progesterone only)

The mini-pill contains 28 days of low dose progesterone; generally too low to prevent ovulation. The pill works by thickening the cervical mucus and preventing endometrial thickening. The mini-pill is less reliable than combined pills and must be taken at a regular time each day. However, it is safer for older women and those who are breastfeeding.



The flow diagram above illustrates where in the reproductive process, from gametogenesis to pregnancy, various contraceptive methods operate. Note the early action of hormonal contraceptives.

1. Explain briefly how the **combined oral contraceptive pill** acts as a contraceptive: _____

2. Contrast the mode of action of OCPs with that of the mini-pill, giving reasons for the differences: _____

3. Suggest why oral contraceptives offer such effective control over conception: _____

