

Summary on the mode of action of Emergency Contraception pills

Emergency contraception is defined as the use of any drug, or the intrauterine insertion of devices, after unprotected intercourse with the aim of preventing an unwanted pregnancy. Unprotected intercourse can lead to pregnancy only if it occurs in the fertile period of the cycle, that is, in the four-five days preceding ovulation and on the ovulation day itself. Only in these days, in fact, the cervical mucus allows the sperms to enter female internal genitalia. Among the fertile days, the pre-ovulatory day is the day on which the probability of conception is highest, followed by the ovulation day and by the second day preceding ovulation. On these same days, the frequency of both protected and unprotected intercourse peaks.

Within this setting, a clinical appearance of pregnancy can only be avoided in two ways: by preventing ovulation in extremis and thereby preventing fertilization or by making sure that the embryo will not find the fertile ground he needs to implant within the uterus.

The substantial difference between the two hypotheses is evident: in the former fertilization is avoided, while in the latter the embryo is actively eliminated before he/she can implant and disclose his/her presence.

Females are most fertile in the three days prior to ovulation – the release of the ovary. If there is unprotected sex during these three days, then the chances that the sperm fertilises the released ovum will be high. The newly created living human embryo will then travel to the uterus where, if the endometrial lining is favourable, will implant.

If emergency contraception is to be effective, the action of the drug should be to delay ovulation during the fertile period so that the waiting sperm will not encounter a released ovum. If the morning after pills work in this way, then their action would be purely contraceptive and not abortive.

The producer (HRA Pharma), the Food and Drugs Administration (US-FDA), the European Medicines Agency (EMA), the most highly reputed international and national gynaecological Scientific Societies report and affirm that ECs works by either inhibiting or delaying ovulation and therefore preventing fertilization without affecting implantation in any way.

Scientific and experimental evidence, on which this position paper is based, leads to a very different conclusion: in fact, these drugs consistently prevent fertilization only when they are taken at the very beginning of the fertile period; in the subsequent fertile days, instead, and mainly in the days closest to follicular rupture, both ECs have no longer any effects on either ovulation or fertilization, while they transform the endometrium into an inhospitable environment for the embryo. Besides, the fertile days closer to ovulation are the most fertile ones in the menstrual cycle and are also the days in which, statistically, most intercourse and most fertilizations do occur.

Ella-One:

Research findings on the mechanism of action of Ella One (ulipristal acetate) have confirmed that in fact this drug DOES NOT delay ovulation in the fertile period. It only delays ovulation prior to the fertile period, where the chances of pregnancy are anyway very low. This same research paper has been quoted by WHO and EMEA to assert that Ella-One causes a delay in ovulation, when the paper's results blatantly show that this is not true.

Ella-One is however effective in preventing pregnancy. If it does NOT delay ovulation in the fertile period and so the ovum is still released and the sperm is present, then the ONLY plausible explanation that no pregnancy results is that the embryo is created but then does not find a favourable endometrium to implant. This deleterious effect on the endometrium by Ella One has been proved scientifically, even at lower doses than are usually in the prescribed drug.

Levonogestrel:

LNG is reported to delay or inhibit ovulation and consequently to prevent fertilization without affecting embryo-implantation in any way. This is stated by the International Consortium for Emergency Contraception (ICEC) and the International Federation of Gynaecology & Obstetrics (FIGO) in their 2008, 2011 and 2012 joint Statements "How do Levonorgestrel-only emergency contraceptive pills (LNG-ECPs) work to prevent pregnancy?".

Actually in the studies quoted in support to the statements, ovulation is not inhibited when LNG is taken in the advanced pre-ovulatory phase, a phase that encompasses the most fertile days of the cycle. A delay in ovulation can only be observed, however, only in 80% of the treated women and not in all of them, when LNG is taken in the first fertile day and that is 4-5 days before ovulation.

The above quoted studies, besides evidencing that most women do ovulate regularly when LNG is taken in the pre-ovulatory fertile period, show that in those same women LNG prevents the formation of an adequate corpus luteum. The drug impairs the production of those hormones (Progesterone above all) that shall prepare the endometrium to embryo-implantation, leading to the impossibility for the embryo to implant.

It must be stressed that LNG taken in any of the fertile days is, nonetheless, highly effective: it prevents the clinical appearance of 70% of pregnancies, though it is unable to prevent ovulation. Evidently, Norlevo effectiveness, that is the ratio between observed and expected pregnancies, must be due to something else, namely, to the alterations in the endometrial tissue. Cohort studies further confirm this suggestion, as they clearly evidence that it is exactly the pre-ovulatory administration of LNG that prevents the clinical appearance of pregnancies. Due to the fact that once ovulation occurs fertilization can normally follow, the contraceptive effect must necessarily be a post-fertilization one.