



A Review on: Phytopharmaceutical Spermicides

Nikita K. Rahane¹, Prof. Aher M.B.²

¹ Academic Personnel, Guide²

Vidya Niketan Institute of Pharmacy and Research Centre, Bota

E-mail: nikitarahane2020@gmail.com

ABSTRACT

Spermicides are bio-actives that may immobilise or kill sperm in vaginal tissues, hence causing contraception in the female genitalia. To decrease sperm viability, the spermicidal medicine may need to inhibit sperm penetration through the uterine cervical tube as well as attack sperm existing in the vaginal walls. Bactericides, sulfhydryl binding agents, natural chemicals, and synthesised products are examples of spermicidal agents. Many classes of spermicidal agents have been widely reported. Spermicides may be offered in a variety of dose forms, including foams, gels, creams, films, sponges, and nanofibers. Due to the ongoing demand for contraception, available pharmaceutical spermicides were especially important for large-scale manufacture. A procedure can be scaled up utilising a quality management system.

INTRODUCTION

On November 15, 2022, it is anticipated that there will be 8 billion people on the planet. According to the United Nations' most recent estimates, the world's population may reach 8.5 billion people in 2030, 9.7 billion in 2050, and 10.4 billion in 2100. Further government initiatives aimed at reducing fertility would not significantly slow the pace of growth between now and mid-century, beyond the gradual slowdown suggested by the projections presented here, given that the majority of population growth until 2050 will be driven by the momentum of past growth. Yet, the combined effect of these adjustments may result in a more significant slowing of population increase in the second half of the century. Sustainable development is hampered by persistently high fertility rates and rapid population increase. From an anticipated 2.5 billion people in 1950, the global population would increase by 1 billion people since 2010 and 2 billion since 1998 to 8.0 billion people by mid November 2022. Since 1950, the number of people has roughly doubled every 37 years, reaching 5 billion in 1987. India is one of the most populous emerging nations, with an anticipated 9.2 billion people living there by the year 2050.

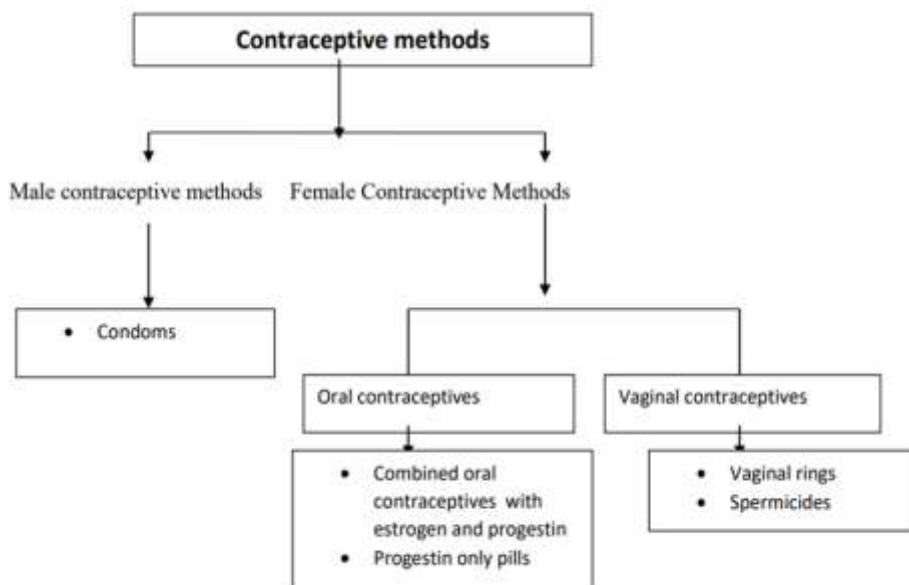
In the modern world, there is a critical need for better, more widely available methods of contraception to address the core issue of unintended pregnancy.

The membrane surfactant nonoxynol-9 (N-9) is typically one of the key constituents in long-lasting vaginal contraception preparations. However, utilising N-9 or other surfactants has a significant disadvantage due to their cytotoxic, detergent-like effects on vaginal cells

Opportunities for Female Contraception

Oocyte and sperm contact is necessary for conception. During sexual contact, hundreds of millions of sperm are released during ejaculation in the vagina, close to the uterine cervix's opening. Sperm pass through the cervical mucus and enter the oviduct through the uterine lumen (also called the fallopian tube or uterine tube). At the time of ovulation, the oocyte (also referred to as the egg or ovum) leaves the ovary, passes through the fimbria into the oviduct, and is then driven through the oviduct and into the uterus by cilia movement and oviduct muscle contractions. As the early cell divisions of embryonic development begin, the single cell embryo, or zygote, continues to migrate via the oviduct and towards the uterus after fertilisation. The ovarian follicle is where the oocyte develops. The dominant, ovulatory, or mature ovarian follicle—also known as a Graafian follicle—produces a significant amount of the steroid hormone oestrogen, which is released into the bloodstream. The anterior pituitary is stimulated by high serum oestrogen levels to release a lot of LH, or a "surge" of LH. An increase in LH causes the

The female body undergoes changes that affect fertility when oestrogen and progesterone are stimulated. Estrogen promotes muscular contractions and encourages oviduct fluid production, which help the oocyte travel from the fimbria and towards the uterus. A thin, watery cervical mucous that is produced by oestrogen is easily pierced by sperm travelling from the vagina into the uterus and in the direction of the oviduct. During menstruation, oestrogen stimulates the growth of the uterus endometrial lining. Progesterone, in turn, lessens oviduct muscle contractions and fluid secretion, which restricts egg entrance and transit via the oviduct. The viscosity of cervical mucus is increased by progesterone, which slows sperm transit from the vagina to the uterus and oviduct.



Chemical Classification Of Spermicides :

1.Natural spermicides

Sr.no	Natural spermicides	Mechanism of action
1	<i>Gossypol</i>	<i>Gossypol Prevent ATP synthesis and consumption, which reduce sperm motility</i>
2	<i>Allitridium</i>	<i>Demonstrated total Immobilization of sperms at 7.5mg/ml and 1.5mg/ml at 3 min It revealed no vaginal irritation reaction or any negative effect at a level of 7.5mg/ml</i>
3	<i>Curcumin</i>	<i>30g/ml used in conjunction. At 300g/ml , complete immobilization is accomplished. The mitochondrial transmembrane potential of sperm changes brought on by curcumin suggest that this substance may disrupt sperm energy metabolism.</i>

Future scope of work

Now a days there is a need of spermicidal or those compounds have ability of contraception. Already market have variety of contraceptives like oral contraceptive pills , gels ,lotion all these marketed preparation good in their antifertility activity but the major problem is with contraception activity

They show large number of the side effects Side effect Involve :

- Bleeding
- Inflammation
- Nausea
- Headache

Mainly they might alter the fertility which may create in family planning so, in order to prevent such side effect of marketed contraceptives

Conclusion :

Vaginal spermicides appear to be the best choice from all these considerations. An ideal preparation is required for the users, especially for the women who can use it as per their own need and convenience, and it must meet following four criteria:

1. Rapid action and effective in killing all sperm on contact or rendering them incapable of fertilization,
2. Systemic nontoxicity, and non irritating nature to vaginal and penile skin and mucosa,

3. No embryotoxic or fetotoxic effects, and

4. Absence of long-term toxicities.

Their effectiveness also depends upon whether they are used in addition to another barrier method, such as the diaphragm, cervical cap, or condom. If used perfectly, the failure rate may be as low as 3%. However, in typical users, the failure rate can be as high as 36%. Studies have shown that when spermicides are used alone, pregnancy usually occurs in 21-26% of women during the first year of spermicide use.

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