



Enzyme Activity of Spermicide

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ABSTRACT: The transmission of fertile spermatozoa and sexually transmitted disease (STD) pathogens during heterosexual contacts may lead to frequent unwanted pregnancies, and infections. Trichomoniasis, the most prevalent non-viral STD, predisposes women to viral STDs, HIV/AIDS and cervical cancer; and newborns to pre-term delivery, low birth weight and high mortality rate. Prophylactic contraceptives targeting both sperm and *Trichomonas* could be an ideal strategy to prevent the heterosexual spread of trichomoniasis since contraception is desired during majority of sexual acts. Unfortunately metronidazole, lacks contraceptive activity, has insufficient intra-vaginal efficacy and proves ineffective against resistant *Trichomonas*. Nonoxynol-9, which forms the active ingredient in most OTC spermicides, kills sperm and STD pathogens by its non-specific, surfactant action. However, clinical trials have shown that repeated use of N-9 containing vaginal products could harm the vaginal mucosa and increase susceptibility to STDs, including HIV. According to an estimate, human sperm contain >55 nmoles of 'reactive' thiols per 10^8 cells which are ~30 times more than those on erythrocytes. The significance of thiols in sperm cell motility/function is evident from the fact that asthenozoospermic infertile men have significantly less thiols on sperm than normozoospermic men. It has already been well established that the motility and metabolism of sperm can be inhibited substantially by agents having affinity for sulfhydryl's, the effect being reversible only negligibly in some cases by cysteine and glutathione. Mammalian sperm flagella require motility for a long period of time from ejaculation to accomplish fertilization. For the maintenance of motility during such a long period, mammalian sperm must continue to metabolize extracellular energy substrates to produce ATP. Therefore, elucidation of the correlation between flagellar movement and energy metabolism is very important to understand the functional features of the mammalian sperm. Furthermore, it has been expected to be applied to the treatment of male infertility and contraceptive technologies. © 2014 iGlobal Research and Publishing Foundation. All rights reserved.

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