

SEXUALLY TRANSMITTED DISEASES & NEEM

Overview

While relatively few researchers have focused on neem efficacy in treating sexually transmitted diseases, the reports that have been completed are overwhelmingly positive.

The most exciting study, partially funded through the US Agency for International Development as a joint venture between Howard University in Washington and the University of Nigeria, focused on both the treatment and prevention of AIDS. Ten volunteers received 1000 grams of neem bark extract daily for 30 days, resulting in significantly increased CD4+ cell counts, body weight and hemoglobin counts. In fact, researchers report that all AIDS-related conditions were completely resolved during the treatment period and month-long follow-up with no adverse affects.

Concurrent in vitro studies showed that neem bark extract prevented cytoadhesion of the HIV virus in 75% of protected cells, compared to 100% infection in unprotected cells. Similar results were reported with malaria and cancer cells.

Previous studies at Johns Hopkins University had shown that neem demonstrated activity against the virus that causes genital herpes both in vitro and in mice. Ongoing reports from India indicate that neem oil in a spermicide has protective agents against the fungus that causes yeast infections and thrush and a private company has begun clinical tests on a neem-based spermicide that it hopes will also control the spread of AIDS.

And while multiple reports detailing neem's immunostimulatory and contraceptive properties don't necessarily address sexually transmitted diseases, they may play a role in research over the next few years.

Recent Research

[Trans R Soc Trop Med Hyg.](#) 2005 Oct;99(10):769-74.

Phase I safety study of Praneem polyherbal vaginal tablet use among HIV-uninfected women in Pune, India.

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=16084547&query_hl=10&itool=pubmed_docsum

Praneem polyherbal formulations containing purified extracts of *Azadirachta indica* (neem tree) have shown activity against HIV and sexually transmitted disease pathogens in studies in vitro. The product also has contraceptive properties. This has prompted its development as a possible

microbicide. We evaluated the safety of Praneem polyherbal tablet use among HIV-uninfected women. Twenty eligible women were enrolled in a Phase I open-label study requiring 14 days of consecutive intravaginal use of Praneem polyherbal tablets. Nine (45%) participants experienced 17 episodes of genital irritation. Transient genital itching was reported by eight (40%) participants, burning micturation by two (10%) and lower abdominal pain, genital burning and intermenstrual spotting by one (5%) each. On colposcopy, petechial haemorrhage was observed in two participants, one on day 7 and the other on day 14, and both were resolved without any treatment. There were no serious adverse events. Praneem polyherbal tablets were found to be safe for once daily intravaginal use for 14 consecutive days in sexually active HIV-uninfected women and a Phase II study may be taken up as a priority.

[Trans R Soc Trop Med Hyg.](#) 2004 Jul;98(7):435-7.

An antimalarial extract from neem leaves is antiretroviral.

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15138081&query_hl=23&itool=pubmed_docsum

An acetone-water neem leaf extract with antimalarial activity was evaluated in vitro at 5 microg/ml for inhibition of adhesion of malaria parasite-infected erythrocytes and cancer cells to endothelial cells, and at 10 microg/ml for protection of lymphocytes against invasion by HIV. The extract was also evaluated in 10 patients with HIV/AIDS at 1000 mg daily for 30 d. The mean binding of infected erythrocytes and cancer cells per endothelial cell was 15 and 11 respectively in the absence of the extract, and 0 and 2 respectively in with the extract. In the absence and presence of the extract, 0% and 75%, respectively, of lymphocytes were protected. In the treated patients, haemoglobin concentration, mean CD4+ cell count and erythrocyte sedimentation rate, which were initially 9.8 g/dl, 126 cells/microl and 90 mm/h respectively, improved to 12.1 g/dl, 241 cells/microl and 49 mm/h. Mean bodyweight and platelet count, initially 57 kg and 328 x 10(3)/mm³ respectively, increased to 60 kg and 359 x 10(3)/mm³. No adverse effects were observed during the study. The extract showed antiretroviral activity with a mechanism of action that may involve inhibition of cytoadhesion. The results may help in the development of novel antiretroviral and antimalarial drugs.

PMID: 15138081 [PubMed - indexed for MEDLINE]

[J Ethnopharmacol.](#) 2000 Aug;71(3):377-82.

Anti-microbial activity of a new vaginal contraceptive NIM-76 from neem oil

(*Azadirachta indica*).

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10940573&query_hl=53&itool=pubmed_docsum

Efficacy of NIM-76, a spermicidal fraction from neem oil, was investigated for its antimicrobial action against certain bacteria, fungi and Polio virus as compared to whole neem oil. The NIM-76 preparation showed stronger anti-microbial activity than the whole neem oil. It inhibited growth of various pathogens tested including Escherichia coli and Klebsiella pneumoniae which were not affected by the whole neem oil. NIM-76 also exhibited antifungal activity against Candida albicans and antiviral activity against Polio virus replication in vero cell lines. It also protected mice from systemic candidiasis as revealed by enhanced % survival and reduced colony forming units of C. albicans in various tissues. This shows that NIM-76 has a potent broad spectrum anti-microbial activity.

PMID: 10940573 [PubMed - indexed for MEDLINE]

[Contraception](#). 1997 Nov;56(5):329-35.

Tests of vaginal microbicides in the mouse genital herpes model.

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9437563&query_hl=23&itool=pubmed_docsum

Microbicide candidates were selected that have demonstrated activity against sperm or sexually transmitted disease pathogens in vitro, and the efficacy of these agents for preventing vaginal transmission of genital herpes infection was evaluated in the progestin-treated mouse. Each agent was delivered to the vaginas of mice approximately 20 sec prior to delivering a highly infectious herpes simplex virus-2 inoculum. The following agents provided significant protection: anti-HSV monoclonal antibodies III-174 and HSV8, modified bovine beta-lactoglobulin (beta-69), carrageenan, concanavalin A, chlorhexidine, dextran sulfate (average molecular weight 8,000 and 500,000), fucoidan, neem, nonoxynol-9, polystyrene sulfonate, and povidone-iodine. Two agents, gramicidin and heparan sulfate, though highly effective in vitro, were not protective in vivo at the doses tested.

PMID: 9437563 [PubMed - indexed for MEDLINE]

[Immunol Cell Biol](#). 1997 Apr;75(2):190-2.

Plant immunomodulators for termination of unwanted pregnancy and for contraception and reproductive health.

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&cmd=Retrieve&dopt=AbstractPlus&list_uids=9107574&query_hl=10&itool=pubmed_docsum

Neem (*Azadirachta indica*) seed and leaf extracts have spermicidal, anti-microbial, anti-fungal and anti-viral properties. They are also immunomodulators that induce primarily a TH1 type response. These properties are being exploited to develop two different useful methods of fertility control. Neem extracts given orally at early post-implantation stage terminate

pregnancy in rodents and primates. Treatment has no residual permanent effect and fertility is regained in subsequent cycles. The mechanism by which the action occurs is not fully clear. A transient increase in CD4 and more significantly in CD8 cells is noticed in mesenteric lymph nodes and spleen. A rise in immunoreactive and bioactive TNF-alpha and IFN-gamma in draining lymph nodes, serum and foetal-placental tissue is observed. A polyherbal cream and pessary have been developed containing three active ingredients of plant origin. These have synergistic spermicidal properties on human sperm as determined by the Sander Cramer test. Their use before mating has high contraceptive efficacy in rabbits and baboons. Another interesting property is their inhibitory action on a wide spectrum of micro-organisms, including *Candida albicans*, *C. tropicalis*, *Neisseria gonorrhoeae*, the multidrug-resistant *Staphylococcus aureus* and urinary tract *Escherichia coli*, Herpes simplex-2 and HIV-1. Phase I clinical trials have been completed in India, Egypt and the Dominican Republic, and indicate the safety of the formulation, its acceptability and beneficial action invaginosis due to infections. PMID: 9107574 [PubMed - indexed for MEDLINE]

[Curr Opin Obstet Gynecol.](#) 1991 Aug;3(4):477-81.

Barrier contraceptives, spermicides, and periodic abstinence.

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http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1878503&query_hl=23&itool=pubmed_docsum

Although barrier contraceptives were among the first methods of preventing unwanted pregnancy ever described for human use, with the advent of the non-coitally related oral contraceptives and intrauterine devices, they gradually fell into relative disuse. However, for a variety of reasons, this is no longer the case. There is a renewed interest in these techniques both as a major form of birth control and also as our best protection against the transmission of sexually transmitted diseases, many of which are now occurring in epidemic form. This latter reason has stimulated fresh approaches to both physical barriers and spermicidal agents. In addition, attempts have also been made to assess the true effectiveness of periodic abstinence and ways in which to make its use more accurate and acceptable.

PIP: Concerns about preventing the transmission of sexually transmitted diseases as well as pregnancy have led to a renewed interest in barrier contraception and spermicides. Although the condom has received greatest emphasis, data suggest that the use of a female barrier method such as the diaphragm and sponge may be even more effective; for adolescent females, at highest risk, combined use of barrier and oral contraception may be indicated. Given the documented low acceptability of the condom among groups at greatest risk and a lack of knowledge about its proper use, interest has focused on female condoms that cover the entire vagina, cervix, part of the female perineum, and the base of the penis. Spermicides enhance the effectiveness of barrier contraceptives, and new approaches--including use of neem oil and in vitro cobaltous ions--are under development. Finally, research is underway to enhance the effectiveness of various forms of periodic abstinence and ovulation detection techniques.

Promising appears to be the supplemental use of a barrier method at the time of presumed ovulation.

Publication Types: [Review](#)

PMID: 1878503 [PubMed - indexed for MEDLINE]

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