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# Garlic clove applied as vaginal suppository – A case report

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ABSTRACT

*Objective:* Besides conventional drugs, various vaginal disorders are often treated with complementary and alternative medicines. Different natural products are often used in treatment of genital infections. The aim is to present a case of treatment of vaginal infection with a garlic clove.
*Methods:* A detailed interview was conducted with the subject whose condition was described in this case.
*Results:* Young woman was diagnosed with vaginal *Ureaplasma* sp. infection. After failed local treatment with antibiotics and antifungals, subject obtained advice to treat the disorder with incised clove of garlic. Control examination by her gynecologist confirmed that infection was successfully cured. Subject experienced no adverse effects.
*Conclusions:* Garlic clove successfully cured vaginal infection presented in this case. However, application to genital organs should be reserved for dosage forms, in order to prevent potential toxicity and to obtain reproducibility of active compounds concentrations.

## 1. Introduction

Infections of genital tract are common in women of all age groups. These are conventionally treated with antibiotics and other anti-infectious drugs, but there is a rise in use of complementary and alternative medicine (CAM) in cases of infections and other types of genital disorders.[1] Some of the CAMs used for treatment of vaginal complaints include *Lactobacillus* sp. vagitoriae, yogurt (used both orally and vaginally), vinegar, lemon juice, bleach, tea tree (*Melaleuca alternifolia*) oil, *acidi borici* and many other.[2,3]

Use of garlic, onion and other different species of genus *Allium* dates to ancient cultures, where these plants were used for treatment of many diseases of eyes, skin and kidney. They were also used in infectious diseases like intestinal worms, lice and nits.[4] Activity against wide range of infectious agents, including viruses, gram-positive, gram-negative and acid fast bacteria, fungi and protozoa is confirmed by modern researches.[5] In this paper we present a direct treatment of vaginal infection with a clove of garlic.

## 2. Case report

A 25 years old woman was having some discomfort after her menstrual bleeding. She stated that right after end of her period, itching appeared in outer parts of genital organs, followed with unpleasant odor. After a visit to her gynecologist, a relevant microbiological laboratory diagnosed her with *Ureaplasma* spp. The subject was treated with commercially available vaginal capsules containing nystatin, neomycin and polymyxin B during 12 consecutive nights. After the treatment, control test revealed that infection was not cured, and symptoms (itching and odor) were not eliminated. Her gynecologist prescribed 12 more vaginal capsules with same drugs. During conversation with close members of the family, she mentioned her problem and her mother-in-law gave her advice of treating vaginal infection with garlic instead of prescribed antibiotics. According to these instructions, our subject had taken one clove of garlic (approximately 2.3 cm long and 1.3 cm wide, similar in size and shape as previously mentioned vaginal capsule), peeled it off and made small cut with knife on longer axis of garlic clove (Fig. 1).

She inserted it into her vagina, in the same manner as previously mentioned capsule, just before going to bed. When we asked for her impressions after insertion of garlic clove, she said that she “felt some minor discomfort in lower part of stomach”, “mostly tingling” and “some minor flatulence”. When asked to rank the discomfort on scale from 1 to 10, subject answered with 3. She also stated that there was no redness on her genital organs. The subject also said that some time after insertion of garlic, she felt the taste of garlic in her mouth. Garlic clove was removed manually next morning, and there were no repeated insertions in next days. A couple of days later, another examination from

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**Fig. 1.** A clove of garlic, as prepared by our subject.

her gynecologist revealed that infection with *Ureaplasma* spp. was successfully cured. The doctor was not informed of the use of garlic. When asked whether she would apply the garlic again, she answered positively.

## 3. Discussion

Biological activities of garlic (*Allium sativum* L.) are mainly attributed to organosulfur compounds present in plant. These compounds are in inactive form when the cloves are intact; however, cutting or crushing the cloves, triggers the enzymatic action which is responsible for formation of active volatile sulfur compounds, associated with characteristic odor and taste of garlic.[4] Interestingly, our subject had similar approach- she made incision on garlic clove, allowing formation of active compounds. Organosulfur compounds are considered to be responsible for a range of preventive and therapeutic effects, including anti-cancer, cholesterol-lowering, antihypertensive, platelet aggregation inhibition, anti-amyloidogenic, anti-inflammatory, liver-protective, and many other.[6] Some of these compounds are presented in Fig. 2.

Unfortunately, there are also reports of some adverse effects of garlic. Various forms of allergic reactions are documented in literature, and they include rhinitis, asthma, cough, allergic contact dermatitis, urticaria, angiedema, pemphigus and anaphylaxis, when garlic is ingested or applied topically. Besides these, chemical irritations by compounds present in garlic is known under the term “garlic burns” as there are numerous cases of skin chemical burns of various degrees, caused both by accident and on purpose. Other types of unwanted effects include adverse effects (including alterations in blood coagulation and gastrointestinal problems) and interactions with conventional drugs.[8] Patients are mainly unaware of these adverse effects and possible interactions, as natural products are often perceived as non-harmful and completely safe. Also, their use is rarely discussed with treating doctor, as was the case with our subject.[9]

When searched using combination of words “garlic” and “vagina” in regular Google browser, the search retrieves approximately 482,000 results, with some of them even giving video clips on how to prepare the garlic clove for insertion. Suggestion for garlic application is sometimes given by older member of family or by a friend,[8] as was also the case with our subject. Scientific medical literature is somewhat scarcer with data on vaginal application of garlic, although the use of garlic and onion over-the-counter products is recognized.[10] A systemic review conducted in 2010, declared that there is no clear data on effectiveness of garlic in prevention and treatment of vulvovaginal candidiasis.[11] However, some later studies made comparison of conventionally used antimicrobial drugs and garlic products for this purpose. Vaginal cream containing garlic (active compound declared to be allein) and thyme used in treatment of bacterial vaginosis was equally effective as metronidazole vaginal gel.[12] A study conducted by Bahadoran et al. compared same herbal cream with clotrimazole cream, concluding that they are equally effective in treatment of patients with mycotic vaginitis.[13] Another study compared orally taken tablets of garlic with fluconazole in treatment of vaginitis caused by *Candida* sp., again concluding that both treatments are effective in the same manner.[14] These studies were controlled clinical trials, and garlic products used in these researches were dosage forms, while our subject used plain clove of garlic.

Some scientific literature also recorded traditional uses of garlic for urogenital disorders. Interviews conducted in Papua New Guinea detected intravaginal use of crushed garlic, which is used “to help ensure a healthy womb” and “to contract cervix after childbirth”. Another type of garlic application is mentioned- vaginal steaming, where crushed garlic is added to hot water (usually in a bucket) and women sit for some time above it, with intention “to facilitate flow of menstrual blood and prevent blockages”.[15] The ethnobotanical surveys conducted on mountains in Serbia detected use of garlic, but none with purpose of treating urogenital system.[16,17]

Presence of *Ureaplasma urealyticum* is still debated as cause of bacterial vaginosis, although there are evidences of proinflammatory potential of this intracellular bacterium.[18] In the presented case, the choice of treatment with vaginal capsule containing two antibiotics and one antimicotic was somewhat unusual for diagnosed *Ureaplasma* sp., as this bacterium is commonly treated with orally taken antibiotics- azithromycin, doxycycline and fluoroquinolones, with good penetration into cells.[19] Polymyxins and aminoglycosides in used vaginal capsule are charged molecules, with low penetration into cells and, thus, low activity against intracellular pathogens such as *Ureaplasma* spp. The possibility that there was other microorganism, such as *Candida* sp., as causative agent of infection cannot be excluded, as levels of microbial flora vary throughout menstrual cycle and sometimes cannot be detected. However, *Ureaplasma* sp. was the only one diagnosed. Unfortunately, our subject's gynecologist had not changed therapy after first course of 12 days, i.e. after this non-specific therapy of wide spectrum turned out to be unsuccessful. There is also a possibility that the present microbial strain was resistant to applied drugs, and potential change of used drugs could have eliminated the cause and symptoms.

Supposed mechanism of garlic's antimicrobial activity is inhibition of sulfhydryl enzymes and other structures essential for microorganisms, presumably by forming disulfide bond with organosulfur compounds.[5,12] However, there seems to be a problematic point in the therapy with raw garlic. As it is said, active forms are formed only after crushing or processing the garlic clove; this also means that amount of released compounds is different in each case of attempted treatment. Consequentially, this can result in therapeutic success in some cases, but also in lack of activity or severe (previously mentioned) adverse effects in others. Although this case report is consistent with previously well-established antimicrobial effects of garlic, there is a questionable safety of this plant if it is applied directly on genital organs. Moreover, possible injuries could even make a treated individual more susceptible to infections. Only properly designed and conducted clinical trials with adequate dosage forms (e.g. vaginal capsules or suppositories) with controlled amount of organosulfur compounds (similar to some of those previously described) could investigate potential of garlic in treatment of vaginal infections, caused by different microorganisms.

In conclusion, garlic clove was effective in treatment of vaginal infection caused by *Ureaplasma* sp. Still, application of garlic to genital organs should be reserved for dosage forms, with controlled amount of active compounds, in order to prevent possible toxicity.

## Conflict of interest

The authors declare no conflict of interest.