Original article

Medicinal preparation and use of Garlic by traditional healers in Southern Nations Nationalities and Peoples State, Ethiopia

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Abstract: A study on traditional medicinal use of garlic was carried out among rural and semi-urban resident traditional health practitioners in the Southern Nations Nationalities and Peoples Regional State (SNNPR) in 1996. A total of 125 traditional healers took part in the study in eight Zones and three Special Woredas in the Region. Their responses indicated that garlic is used for the treatment of common cold (88%), malaria (85%), cough and lung TB (66%), hypertention (57%), wounds (25%), sexually transmitted diseases (22%), mental illnesses (22%), kidney (19%), and liver diseases (16%). The responses also suggest that the medicinal content lies in the broad-bulb which must be taken raw. Ninety six (77%) respondents stated that the bulb should be crushed before use while 88(70%) of them suggested the taking of 2-3 table spoonfuls of the crushed garlic on daily basis. The duration of treatment varied from one to ten days. The frequency of use is indicated to be once every morning (46%), twice a day, in the morning and at night (30%) and thrice a day (18%). Twenty nine (23%) of the respondents suggested the use of lemon juice after consuming the garlic preparation in order to reduce the odour. All of these claims have concurred with the so far documented scientific explanation about the medicinal value of this plant. But there could be a problem with standardizing the dosage as there has been no attempt made to extract the medicinal contents using modern techniques so as to incorporate it into the pharmaceutical sector in this country. Thus, it is recommended that preparation and use of garlic for incorporation into the modern medical treatment system should be investigated further. [*Ethiop. J. Health Dev.* 1999;13(2):93-99]

Introduction

In addition to its use as a condiment and food, garlic has remained a very popular plant in traditional medicine since ancient times. For example, the Egyptian papyrus of 1600 BC described an uprising by men working on the pyramids because their daily food ration did not contain enough onions and garlic which was then thought to keep them fit and strong for the task. Watt *et.al.*, reviewed the traditional use of garlic in various countries and cited that it was commonly used to be taken mashed with honey as carminative, antihelmentic, expectorant, antihypertensive, antiasthmatic, aphrodisiac, diaphorectic, and in the treatment of other gastro-intestinal conditions (1).

Garlic has captured a secure position in modern medical science, especially in the years following World War II. It had formerly been popular and, to some extent, still used as a carminative for dyspeptic problems and diarrhoea, as an anti-microbial for bacterial, fungal and viral infections, and as vermifuge for intestinal parasites. Of all the therapeutic effects of garlic that have been reported over the years, perhaps the most interesting are those on the heart and circulatory systems (2).

Both animal experiments and human clinical observations have shown the value of garlic in the prevention and treatment of atherosclerosis and vascular hypertension. Administration of garlic in both raw and boiled forms prevented the increase in serum total cholesterol and tryglycerides. A marked decrease in coagulability and increase in blood fibrinolytic activity were observed after the ingestion of garlic (3,4). The hypocholesterolemic action of garlic is ascribed to allicin (its S containing compound which can react with -SH group). All experimental groups of human volunteers who were given 10g of garlic daily showed significant decrease in blood cholesterol level within two months (7,8). Since it has also been shown to reduce blood pressure, it is evidently beneficial in gadding against stroke (9,10,11,12).

In many parts of the world, traditional healers used garlic as a remedy for diabetics in traditional medicine. In various studies, oral administration of garlic to human volunteers produced a significant hypoglycaemic effect at the end of the fourth week. These hypoglycemic activities of garlic juice is closely comparable to that of tolbutamide (13,14,15,16).

Investigations into the biologically active substances of garlic verified its medicinal value for gastric ulcers and pancreatitis. It contains the types of prostaglandins (A, B and F), which are powerful inhibitors of the secretions of gastric juice. Garlic is superior to piperazine citrate with respect to vermicidal potency. This confirms its traditional claim as antihelmintic for ascariasis and oxyuriasis (17,18,19).

Garlic has been found to have a very active antimicrobial effect, and many authors are of the opinion that there is abundant evidence that the antibiotic value of the plant is on a par with that of penicillin and other antibiotics (20,21,22). Extracts of garlic have fungicidal action in high concentrations and fungistatic action in low concentrations (23,24,25,26). The antiviral activity was found to occur at concentrations below toxicity level to the tissue culture. Hence, these antiviral concentrations might be achieved in man or animals without any danger of significant toxicity (27). The antimicrobial principle of garlic is rapidly formed from a precursor which breaks down readily when the garlic is crushed. Hence, it is more effective when used crushed than segmented.

Garlic was traditionally used for the treatment of cancer of the uterus. Numerous reports, including several important epidemiological studies, have asserted that it has a favourable effect on various forms of cancers. Cytologically, the effects of this plant were much like those induced by colchicine, producing blockage of the metaphase cells and scattering, as well as abnormal condensation of metaphase chromosomes. The inhibitory effect of garlic on nitrate reducing bacteria and their production in gastric juice indicates its use in the treatment of gastric cancer (28,29,30).

Inhalation of pulped and crushed garlic is traditionally used in the treatment of pulmonary disorders in various countries. Studies have confirmed that a concentration of 1:5000 of garlic juice completely inhibited the growth of mycobacterium tuberculosis. This effect is not destroyed by boiling and prolonged storage (31). The volatile oil of garlic inhibits liver lesions and decreases infiltrated cells. The volatile oil elicits an intense inhibitory action on the formation of lipid peroxides and its potency is stronger than that of the reference substance, Vit.E (32). Many other health related uses have been documented (33,34,35,36,37).

Much has been written on the medicinal effects of garlic and new studies are continually being published throughout the world. Although no notable scientific work has been conducted in Ethiopia, Abebe and Ayehu (39) have recently documented some of its traditional medicinal uses in Northern Ethiopia . According to this study the bulb of garlic is pasted with honey or butter or the juice is used to paste other plant remedies (powders) in the treatment of malaria, eczema, snake bite, "mitat", emaciation ("aynt`la"). The objective of this study is to document an overview of the medicinal preparations and use of garlic in the treatment of ailments by the traditional healers in the SNNPR.

Methods

A total of 240 traditional medical practitioners from nine Zones and five special Woredas were reported to the Division of Pharmacy and Traditional Medicine of the Regional Health Bureau according to a 1993 Region-wide census carried out to register traditional healers. Out of all the healers reported, 125 were herbalists who also employ garlic in their list of herbal drugs. This study, therefore, focuses on traditional healers who use garlic in their practice. They were all residents of rural and semi-urban areas with adequate information on the use of garlic for remedy and have developed reputation among their neighbours to provide such practice. An informed consent to participate in the study was obtained before the commencement of the survey. All of the respondents were approached through health professionals in Zonal Health Departments and those from the Regional Health Bureau.

The semistructured questionnaire designed to collect the data contained the respondents' personal characteristics, knowledge of the medicinal use of garlic, preparation forms, and dose used to treat clients and methods adopted to deodorize the smell. Data collected by the survey were compiled and analysed in the Regional Health Bureau using simple tally sheets and summary tables prepared for this purpose.

Results

Out of the total of 125 respondents interviewed, 88(70%) were males and 37(30%) were females. Most of them were literate (69%) and 12(9.5%) could only read and write while 27(21.5%) were illiterate. The group included were 10(8%) below the age of 40 years old , 69(55%) in the age range of 40-49 years, 27(22%) in the age range of 50-60 years and 19(15%) were above 60 years of age.

Source of knowledge and their adoption of garlic in their healing practices were stated to be mainly from parents (69%), neighbours (15%), or both (4%), and personal observations (12%). Concerning the length of period they have used garlic in healing practice varied from five to 30 years and over (see Table 1).

According to their reply, garlic preparations were suggested to be effective in the treatment of common cold (88%), malaria (85%), cough and lung TB (66%), hypertention (57%), wound healing (25%), sexually transmitted diseases or STDs (22%), mental illnesses (22%), kidney diseases (19%), liver diseases (16%), asthma (10%) and parasitosis (10%), as among the top list of diseases, in ascending order of importance. Other diseases treated included diarrhoea, throat diseases, abdominal colics, gastritis, eye diseases, toothache, diabetes, skin diseases, unspecified disease conditions (mitch), headache, typhus, swellings, back pain, evil eye, and haemorrhoids. It is also used as antidote for poisoning by snake bite.

With regard to the preparation and the forms of use and dosage, all of them stated that medicinal contents lie in the broad-bulb

while a few of them (9%) also stated that stems and leaves do contain medicinal value, too. Ninety six (77%) of the respondents said that the bulb should be skinned out or peeled and then crushed before use while 68(54%) claimed it should also be segmented and/or crushed for medicinal preparation. Concerning additives to be included in the preparation form indicated mixing with honey (55%), with meat (35%), with cheese (27%), with butter (25%), and with milk (8%). As the method of administration, majority of the respondents (94%) stated that the crushed or segmented garlic preparation should be taken raw while 26(20%) of them also claimed it should be boiled or/and taken raw. Concerning dosage 88(70%) of the respondents stated that 2 - 3 table spoonful of the crushed crude garlic can be taken per day while 22(27%) of them also claimed that it is possible to allow to take a

full cup of coffee. The duration of treatment was stated to vary from five to 10 days by 44(35%), 1-5 days by 19(15%) while 10(8%) of them claimed that it should be continued until recovery varying with the type of diseases involved. The majority of the respondents (46%) also stated the time of ingestion should be every morning, twice a day (both in the morning and at night before going to bed) 22(18%) while 8(6%) of them claimed that it should be taken three times a day.

Only 8(6%) of the respondents claimed it should be taken once in a day at bed time.

With regard to toxicity of the plant, 57(46%) stated fatigue as a problem, polyurea by 25(20%), sedating effect by 16(13%) sweating and diarrhoea by 6(4%), while 37(30%) claimed that there is no adverse effect. As to the method employed to reduce the odour, all of them stated that it is difficult to remove the odour completely, except by cooking, which adversely affects its medicinal value. However, 29(23%) of the respondents claimed that the odour can be significantly reduced by sucking or ingesting lemon juice after the consumption of garlic. Others stated the use of salt 28(22%), chewing raw cereals 25(20%), chewing roasted coffee 24(19%), chewing eucalyptus leaves 11(9%), and chewing leaves of "Tena Adam" 8(6%) after administration of raw garlic.

Discussion

There is a general understanding that traditional medical practices play an enormeous part in developing countries and herbal remedies constitute a major part of the service. From daily life experience and frequent contact with the users, the authors are of the opinion that garlic is widely used in large quantities as food additive in all forms of food and drinks in the Region, especially in North Omo. Although there is a lingering suspicion that communities would not have sufficient information on the broad spectrum properties of the plant, every family would confidently say that it is used prophylactically or in the treatment of one or the other ailment.

This study has revealed the attachment of traditional practitioners to herbal medicine in general and to garlic in particular. The claim they presented on the broad spectrum property of garlic has scientifically been supported with empirical evidences so far documented (1, 2).

Many practitioners claimed that garlic is used to reduce blood pressure. It has been reported that garlic reduces systolic arterial pressure more than 8-33 mg Hg and diastolic arterial tension by 4-20 mg Hg (8,9,10,11). The claimed effect of

garlic on sexually transmitted diseases, kidney infections and wounds would be considered due to its antimicrobial component especially its antibiotic property (20,21). The majority of the respondents believed that garlic is used in the treatment of cough and lung TB. This is in conformity with the scientific explanation that garlic juice completely inhibits the growth of mycobacterium tuberculosis in low concentration (31). The claim of the respondents that garlic is used in the treatment of liver diseases is also supported by scientific studies (32). The belief that garlic is used in the treatment of mental illnesses is supported by investigation which confirmed the presence of a high content of vitamin B_6 in garlic (33).

The idea that the bulb should be ground or crushed before use does concurr with the medicinal principle of garlic, being formed from a precursor which breaks down when the garlic tissues are crushed. Although the dose and duration of treatment do vary according to individual users, the traditional claim and scientific recommendation on the side effects have noted no toxicity, even with relatively large doses. The dosage recom-mended by scientific studies varies between 10g and 20g of the whole drug, or of juices and oils obtained from this (37). The full effect of garlic has been indicated to be based on its totality, i.e, the whole plant has to be taken as it is, as a biological product of nature and, preferably, raw (32). The results of the study agree with this explanation.

The traditional practitioners use different methods to reduce its unpleasant smell. Any attempt to reduce odour by boiling or cooking reduces its effect; therefore, the unpleasant smell has to be accepted, too. A better, though not fully effective, alternative is repeated weekend courses of garlic therapy. People not working on Saturdays start Friday night, with the first dose of garlic. Further doses are taken three times on Saturday, and on Sunday in the Morning and at midday. No more garlic is taken on Sunday evening, so that the greater part of the smell would disappear by the time the patient returns to work on Monday (37).

Despite the continued efforts to optimize its coverage, access to organized modern medicine in Ethiopia remains unsatisfactory. With such far less than satisfactory modern health service coverage and bleak prospects of its expansion in the near foreseeable future, the common people will thus continue to rely on traditional therapeutic agents (39). Therefor, it is recommended that further research would need to be done to get an insight into the value of traditional drugs like garlic that are widely used by the community to ascertain its preparation and use so as to incorporate it into the modern medical treatment system in the country.

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Table 1. **Respondents years of experience in using garlic in their healing practices, SNNPR, 1996**

Duration	N	Percent
5- 10	22	18%
11-20	49	39
21-30	21	17
>30	20	16

Not stated	13	10
Total	125	100

Table 2. **The ten top (common) diseases claimed to have been treated with garlic, SNNPR, 1996.**

Diseases	N	Percent
1. Common cold	110	88
2. Malaria (woba, Ndad)	106	85
3. Coughs and Lung TB (Samba)	83	66
4. Hypertention	71	57
5. Wound (Kusil)	31	25
6. Veneral Diseases(STDs)	28	22
7. Mental illness	27	22
8. Kidney Disease	24	19
9. Liver disease	20	16
10. Asthma	13	10

Table 3**. Preparation of garlic used in the traditional healing practice used in SNNPR, 1996**.

Description	N	Percent
Crushed by milling	96	77
Segment with knife finely	68	54
Chewed and swallowed raw	4	3

Table 4. **Additives mixed with garlic during preparation, SNNPR,1996**

Description	N	Percent
Honey	69	55
Crushed meat	44	35
Cheeze	34	27
Butter	31	25
Milk	22	18

Water	8	6

Table 5 . **Dosage of grlic preparation, SNNPR, 1996.**

Description	N	Percent
2-3 table spoonful per day	88	70
A coffee cup full per day	27	22
Vary according to indications	10	8

Table 6**. Duration of treatment of gralic therapy, SNNPR, 1996.**

Description	N	percent
-1-5 days	44	35
5-10 days	55	42
Taken until recovery	19	15
Vary according to indications	10	8

*Some respondents gave more than one