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Evaluation of the effectiveness of the aqueous extract of ginger and cloves on the growth and viability of the protozoa of the hydatid cyst parasite outside the body of the organism

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Abstract---The current study aimed to evaluate the effectiveness of different concentrations of the aqueous extract of ginger and cloves on the vitality of the protostars of the parasite *Echinococcus granulosus*, which were isolated from the hydatid cyst fluid of the livers of sheep infected with concentrations of (5, 10, 15, 20) mg/ml for periods of time and the vitality of the principals was calculated. by 0.1% aqueous eosin tincture. The hot extract of ginger and cloves recorded a greater effect than the cold extract for them.

Keywords---evaluation, effectiveness aqueous extract, ginger, cloves, protozoa.

Introduction

Hydatid cyst, also called echinococcosis, is a zoonotic disease that is common in humans and animals and is endemic to Africa and South America. *Echinococcus granulosus* and *Echinococcus multilocularis* (*Echinococcus multilocularis*) and its final hosts are predators such as leopard, hyena and wolf (1,8,22). Because of the absence of symptoms, it is not possible to early diagnose the infection until the cyst grows and presses on the neighboring organs, and it resembles cancer in the stage of metastasis, and because of the seriousness of the infection and the inability of people to perform operations. The way to control it. (18). The focus was also on stimulating the host's immunity to resist the disease.

The hydatid tissue fluid consists of complex molecules, and the fluid is colorless and yellowish, with a pH between 6.7-7.2, and inorganic substances: sodium, magnesium, iron, phosphorous, chlorine, hon, and some enzymes, as well as the presence of proteins and nitrogenous compounds. It represents the source fluid for parasite antigens through which it is diagnosed (17). The bag is characterized by the fact that it allows the entry of foodstuffs and does not leave its basic

materials (9,11). (Since ancient times, medicinal plants have been used as antibiotics to treat many diseases. It is estimated about 250000-500,000 medicinal plants, which were prepared as an ointment or powder and taken from the leaves, roots, stems or seeds of plants such as extracts of scholars, cloves, black bean, wormwood, garlic, onion, pepper and many others as an inhibitor of the vitality of parasites and bacteria. And fungi (3). One of these plants is ginger. Ginger has been used as a natural remedy for centuries for many diseases, such as vomiting, diarrhea, relieving menstrual pain and headaches, and in medical research it was found that it stops the growth and spread of cancer, and it is one of the best medicinal herbs and preserves the body and provides it with a very strong energy and activates Immunity and is considered the best natural sexual tonic (5,4) (It contains Zingiberaceae of the Zingiber officinale family and is called scientifically. It is one of the decomposing enzymes and anti-inflammatory. Zingibain

As for cloves, it is one of the evergreen plants with a strong and distinct smell and its seeds resemble a nail. It is used as an antiseptic for the mouth and stomach and is useful for the heart, sores and allergies and treats fever and toothache as it is a natural antibiotic. Its active substance is Eugenol, an aromatic chemical compound that is soluble in water and alcohol. Its chemical formula is $C_{10}H_{12}O_2$ and its ratio is in The seeds are 82% and the oil is dried to maintain its quality. The active substances in it include phenolic compounds, alkaloids, terpenes, and glycosides. Its scientific name is *DIANTHUS CARPHYLLUS* Last name: CARYOPHYLLACEAE English name: CARNATION

The word *DIANTHUS* consists of two syllables, the first *DIOS*, which means in Latin "god" and the second, *ANTHOS*, which means "flower", meaning the flower of the god or the sacred flower. The height of the stalk of carnation flowers reaches 75 cm or more, and its leaves are narrow, opposite long, and its flowers are of different colors and shapes. Clove oils are extracted from the leaves, flowers and seeds, which are used for medicinal purposes. The dried ripe flower buds are also used in herbal formulations in traditional Chinese medicine (1). 2,3.(

Therefore, this study aimed to use the natural plant extracts of ginger and cloves to evaluate their effectiveness in inhibiting the vitality of the protozoan parasites from the hydatid fluid of infected sheep's liver.

Materials and working methods

Sample collection

Collecting the bags and preparing the primary heads

Samples of sheep livers were collected from the slaughterhouses in Najaf Governorate and placed in a plastic container. They were transported to the laboratory and washed well with water to get rid of blood and other suspended substances, then sterilized with 70% ethyl alcohol after that, according to the method (Smyth 1985) withdrawing Hydatid fluid from the sachet was collected in a glass beaker with a capacity of 500 ml, then the sachet was opened and the bruised layer was extracted and kept in another beaker containing physiological saline solution, then it was washed with 0.9% phosphate buffer saline (PBS)

solution twice, and the antibiotic streptomycin 1 g/g/ After that, the hydatid liquid and the solution to wash the generated layer were placed for 3 minutes in a centrifuge at a speed of 3000 rpm and for 15 minutes to precipitate the capillaries. A volume of the primary capillary suspension was mixed with the same volume of aqueous eosin dye in an amount of 0.1% and by means of a micro pipette with the solution agitated. He took a drop of it and examined it under a light microscope, and then calculated the percentage of live green-leaning and dead red-headed primates (). Then the fixed-volume transfer method was used through the micropipette with a size of 10 mm. Microliters of the suspension solution with buffer to calculate the number of primary heads and my quantities: average head size (1 ml) = 24.4 heads = 24.4 * 100 = 2440 heads. The dead number was neglected and the approximate green live number = 2384 primary heads in 0.6 ml.

Preparation of aqueous extract samples of ginger and cloves

Prepare the powder of ginger roots and seeds of the clove plant and grind them with the electric grinder and put the powder in sterilized glass containers and keep in the refrigerator at a temperature of (4) C. Each powder separately until use. Then (100) g of ginger powder was taken and (1000) ml was added to it. of cold distilled water and left for one day and shaken the box and stirred the mixture by magnetic vibrator for an hour and left another hour then filtered with filter paper for three times to get rid of suspended matter and then placed in the centrifuge for 10 minutes, then the extract was placed in an oven at a temperature of 45 C To obtain the extracted sample and the same thing with clove seed powder. Four concentrations of it (2.05, 5, 7.5, 10) were prepared according to the size law = $N1.V1 = N2.V2$.

Table (1) Viability percentage of primary primates in 6 replicates

S D+	Total	6	5	4	3	2	1	المكررات
-								
159.8 +- -3.8	959	166	164	158	153	156	162	معدل العدد الكلي للرؤيسات الاولية
151.1+- 3.4	907	151	153	150	145	150	158	معدل عدد الرؤيسات الحية
8.6 +_ 1.8	52	10	11	8	8	6	4	معدل عدد الرؤيسات الميتة
	94.57	90.96	93.29	94.93	94.77	96.15	97.53	النسبة المئوية

Table (2) The effect of cold aqueous extract of ginger plant on the protozoa of the hydatid cyst parasite

النسبة المئوية % لهلاك الرؤيسات الاولية في الدقيقة						التركيز ملغم/مل
120	90	60	30	15	0	

86	89	92	96	98	100	السيطرة
82	87	90	94	97	100	5
63	80	88	93	95	100	10
46	65	73	81	90	100	15
29	57	68	77	86	100	20

Table (3) Effect of the boiled aqueous extract of ginger plant on the protozoa of the hydatid cyst parasite

النسبة المئوية % لهلاك الرؤيسات الاولية في الدقيقة						
120	90	60	30	15	0	التركيز ملغم/مل
80	83	86	90	92	100	السيطرة
56	61	74	88	91	100	5
36	44	62	77	89	100	10
28	39	57	65	84	100	15
7	21	42	51	80	100	20

Table (4) Effect of the cold aqueous extract of clove plant on the protoplasts of the hydatid cyst parasite

النسبة المئوية % لهلاك الرؤيسات الاولية في الدقيقة						
120	90	60	30	15	0	التركيز ملغم/مل
85	88	91	95	97	100	السيطرة
81	86	89	93	96	100	5
62	79	87	92	94	100	10
45	64	72	80	89	100	15
37	56	67	76	85	100	20

Table (5) Effect of the boiled aqueous extract of clove plant on the protoplasts of the hydatid cyst parasite

النسبة المئوية % لهلاك الرؤيسات الاولية في الدقيقة						
120	90	60	30	15	0	التركيز ملغم/مل
83	86	89	93	95	100	السيطرة
69	74	77	81	94	100	5
50	67	75	80	92	100	10
33	52	60	78	87	100	15
18	42	55	64	83	100	20

Discussion

Table (1) showed the knowledge of the vitality of the live primates through eosin staining and its penetration into the primates so that they were dyed in a greenish color, in contrast to the dead primates that were dyed in red color and for six replications. Without dependence on their movement, in some cases, there are live, but static, primates, and the eosin pigment of the primates represents an osmotic phenomenon of the living envelope. The current study showed the effect of plant extracts on the vitality of the protoplasts. The aqueous extract of boiled ginger had a great effect on the protozoa of *Echinococcus granulosus* and with

different concentrations and time periods that were exposed to it. The concentration (20) mg/ml was the most effective, followed by the concentration (15, 10, 5). This effectiveness is due to the compounds that ginger contains in its roots, such as glycosides, tannins, saponins, resins, alkaloids and flavonoids, all of which are anti-parasitic and fungal inflammatory substances and other microorganisms. It also contains volatile oils (3%), protein (9%) and protease enzyme (2.26). % Table (2) and (3) showed the inhibition of capillary vitality by cold and boiled aqueous extract, which amounted to (29.7)%, respectively. This is consistent with (8.)

The current study also showed the effect of plant extracts on the vitality of the protozoa. The boiled aqueous extract of clove seeds had a great effect on the *Echinococcus granulosus* substrates and with different concentrations and time periods that were exposed to them. The concentration (20) mg/ml was the most effective, followed by the concentration (10, 15), 5) Respectively, this activity is due to the compounds contained in cloves in its seeds, such as all anti-parasitic and fungal anti-inflammatory substances and other host organisms. The active substances in it include phenolic compounds, alkaloids, terpenes and glycosides, and it also contains volatile oils (1.9%) as shown in Table (4.) and (5) inhibition of the vitality of the primates by cold and boiled aqueous extract, which amounted to (18,37)%, respectively. This is consistent with (3.7.)

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