

An overview on ajwain (carom seed) against COVID 19.

Sonalika Mohapatra*

Department of Microbiology, Centurion University, Bhubaneswar

Abstract

The COVID-19 pandemic has posed an unprecedented global health challenge, necessitating the exploration of various preventive and therapeutic measures. In this context, traditional medicinal plants and herbs have garnered significant attention for their potential in managing viral infections. Ajwain (Carom Seed), an aromatic spice commonly used in culinary preparations and traditional medicine, has emerged as a subject of interest due to its reported antiviral properties. This paper provides an overview of the current research and knowledge regarding Ajwain's potential role in combating COVID-19. It discusses the phytochemical composition of Ajwain, highlighting compounds such as thymol, which have demonstrated antiviral and immunomodulatory properties. Additionally, this overview explores the mechanisms through which Ajwain may exert its antiviral effects, including inhibition of viral replication and enhancement of the host immune response.

Keywords: COVID-19, Ajwain, Phytochemical.

Introduction

The World Health Organization (WHO) has declared the coronavirus disease 2019 (COVID-19) a pandemic. A global coordinated effort is needed to stop the further spread of the virus. A pandemic is defined as “Occurring over a wide geographic area and affecting an exceptionally high proportion of the population.”[1] We have now reached the tragic milestone of one million deaths, and the human family is suffering under an almost intolerable burden of loss [2]. The ongoing pandemic of COVID-19 has forced the governments to impose a lockdown, and many people have suddenly found themselves having to reduce their social relations drastically [3]. It causes serious lower respiratory failure, as in previous examples, and may damage the central nervous system in the early period, unlike the previous ones. It is proven that the virus is transmitted by airborne droplet infection and through contact with infected surfaces. The period between the introduction of the virus into the body and the onset of symptoms is called the incubation period, which is about 4 to 7 days in the majority of cases and can vary from 2 to 14 days when COVID-19 is concerned. Symptoms include fever in 80 to 90% of cases, cough in 60 to 70% of cases, gastrointestinal complaints in 40 to 50%, loss of smell in 30 to 40% and shortness of breath in 20%. Not all these symptoms are necessarily observed.

In December 2019 the first cases for COVID-19 infections were reported [4]. From 18th December, 2019 to 29th December 2019, 5 patients having acute respiratory distress syndrome were hospitalized among which one patient died [5]. Up to 2 January 2020, 41 patients were identified to possess laboratory

confirmed COVID-19 infection. Almost half of these patients had underlying diseases particularly cardiovascular diseases, hypertension and diabetes [6]. It was believed that these patients were infected in hospital possibly due to nosocomial infection. Thus it was concluded COVID-19 is not a super-hot spreading virus but it most likely spread as many patients get infected by unknown mechanisms at different locations in the hospital.

Coronavirus disease symptoms (COVID-19)

COVID-19 affects different people in different ways. Most infected people will develop mild to moderate illness and recover without hospitalization.

The most common symptoms of COVID-19 are fever, dry cough, and fatigue.

Other symptoms that are less common and may affect some patients includes loss of taste or smell, nasal congestion, conjunctivitis (also known as red eyes), sore throat, headache, muscle or joint pain, different types of skin rash, nausea or vomiting, diarrhea, chills or dizziness [7].

Symptoms of severe COVID-19 disease include shortness of breath, loss of appetite, confusion, persistent pain or pressure in the chest, high temperature (above 38 °c).

Other less common symptoms are irritability, confusion, reduced consciousness (sometimes associated with seizures), anxiety, depression, sleep disorders, more severe and rare neurological complications such as strokes, brain inflammation, delirium and nerve damage [8].

*Correspondence: Sonalika Mohapatra, Department of Microbiology, Centurion University, Bhubaneswar, India, E-mail: sonasalony782@gmail.com

Received: 25-Sept-2023, Manuscript No. AAAGIM-23-114412; Editor assigned: 28-Sept-2023, PreQC No. AAAGIM-23-114412(PQ); Reviewed: 12-Oct-2023, QC No. AAAGIM-23-114412; Revised: 17-Oct-2023, Manuscript No. AAAGIM-23-114412(R); Published: 24-Oct-2023, DOI:10.35841/aaagim-7.5.192

Aim

To prevent Covid 19 symptoms with carom seed (ajwain).
Scientific name: *Trachyspermum*

Objective

- Immunity boosting
- It helps in soothing cold and cough.
- It also helps in digestion and basically a healthy digestion is intimately tied with weight loss too.
- It is used to alleviate gas, flatulence and curbs bloating.
- It may help to manage high blood pressure.
- It is an antioxidant, which help prevent free radical activity.
- It has an anti-inflammatory property which helps to provide relief from agony and discomfort caused due to cold, clogged nose and chest congestion.
- Consuming warm ajwain kadha is also effective in thinning mucous and chest congestion and clearing your nasal passage enabling you to breathe easy.
- Carom seeds used as herbal remedy in case of Colic, Diabetes, Deafness, Ear pain, Belching, Migraine, Heart problem, Body cleanser, Calculus, Arthritis, Viral infection, Asthma, Viral infection etc [9].

Materials required

Ajwain (carom seed), Lime juice, Ginger Garlic, Water, Black Salt

Procedure

Colic: Boil 1 teaspoonful of fennel seeds and ½ teaspoonful of carom seeds in ½ litre of water. Heat the liquid slowly for 5 minutes. Cool, strain and drink a cup daily of this liquid after meals to relieve colic.

Diabetes: Carom seeds are used to cope up with diabetes. Dry few neem leaves in the shade. Powder and store in an air tight container. At night, mix 1 teaspoonful of the powder in hot milk with ½ teaspoonful of powdered cumin and carom seeds. Consume it for 30 days to reduce blood sugar level.

Deafness: Carom seeds have been used to cure deafness. Put few drops of thymol oil, obtained by extracting carom seeds and put a few drops in your ears to get rid of deafness.

Ear pain: Heat one tea spoonful garlic and two tea spoonful carom seeds in sesame oil, till they are red in color. Cool, strain and put a few drops of this liquid into the ears. This is also useful to treat boils in ears.

Flatulence: Soak 3 teaspoonfuls of carom seeds in lime juice. Dry this in the shade. Powder and mix it with little black salt and consume 1 teaspoonful twice a day with warm water.

Belching: Many gas related problems can be cured by a mixture of dried ginger, carom seeds and black salt. This is useful to treat problems related to gastric like gas, indigestion, and belching. It can also be taken by adding car this mixture in warm water with cardamom and drink it.

Migraine: Wrap carom seeds in the tissue paper and smell this mixture. It is useful to reduce migraine headache. Also they can be burnt and inhaled for other problems related to head.

Heart problems: Consume one tablespoon of carom seeds with warm water to stimulate the heart. It is also beneficial to cure chest pain. One can mix one teaspoon of jaggery with some carom seeds to get quick relief from heart problems.

Body cleanser: Consumption of carom seeds tea can help in cleansing body toxins. Thus, this can reduce many skin and health related problems. This helps to purify blood and improve the blood circulation in body.

Calculus: By Consuming 6 grams of carom seeds daily, one can get rid of this stone disease.

Menorrhagia: Soak 25 gram of carom seeds in a mud pot filled with water for whole night. Grind these carom seeds and drink in the morning.

Urticaria: Consume 1 gram of carom seeds with 3 grams of jaggery. This is a useful remedy to cure this problem of urticarial.

Digestion: Carom seeds helps to get relieve from digestive problems. Chewing 1 teaspoonful of raw carom seeds with or without sugar can help get rid of indigestion. Soak three teaspoon of carom seeds in lime juice and dry it in shade. Grind this and mix some black salt. Consume this twice a day with lukewarm water. This is a useful method to cure loss of appetite, flatulence and other stomach problems. Do this daily till you get the results.

Arthritis: Carom seed oil is a very useful method to cure arthritis pain. Massage on affected joints regularly with carom seed oil to get relief from rheumatic pain.

Diarrhea: Carom seed is a natural remedy to cure dysentery or diarrhea. Boil a handful of carom seeds in one glass of water. Cool and strain this carom water so that it can be consume twice a day. This is an orthodox remedy to cure indigestion and dysentery.

Viral infections: Combined mixture of yogurt and carom seeds powder in the form of paste can be applied on face for the whole night can help to lighten acne scars. Wash it with lukewarm water in the morning for best results.

Acidity: Mix one table spoon of carom seeds with one table spoon of cumin seeds. Consume them on a daily basis with some ginger powder. This natural remedy is a best way to cure acidity and indigestion problems.

Constipation: Carom seeds are the best remedy to cure digestion related problems. So, it can also help to get rid of from the problem of constipation. Carom seeds do not have any side effects.

Asthma: Consuming carom seeds with warm water give instant relief from cold and expel cough and mucus from the body. It is also useful for treating bronchitis and asthma. It can be consumed with jaggery twice a day.

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Irregular Menses and Excessive Bleeding: Women with the problem of irregular menses and excessive bleeding can drink ajwain water. Soak handful of carom seeds in earthen vessel filled with water at night. Grind them and drink it in the morning is a good remedy to get rid of this problem.

Discussion

The carom seeds botanical name *Trachyspermum* belong to the family of Apiaceae (Umbelliferae), of the genus; *Trachyspermum*.

The phytochemical constituent of ajwain includes iron, calcium, cobalt, phosphorous, copper, magnesium, iodine, riboflavin, nicotinic acid and thiamine. The ajwain seeds are also famous for their essential oil. The seeds comprise of 2.5-5% essential oil.

- **Iron:** Iron is an essential element for blood production. About 70 percent of your body's iron is found in the red blood cells of your blood called hemoglobin. It is primarily involved in the transfer of oxygen from the lungs to tissues. It also plays a role in metabolism as a component of some proteins and enzymes.
- **Calcium:** The body needs calcium to maintain strong bones and to carry out many important functions. Almost all calcium is stored in bones and teeth, where it supports their structure and hardness. The body also needs calcium for muscles to move and for nerves to carry messages between the brain and everybody part.
- **Cobalt:** Cobalt is only in the body as part of vitamin B-12. It's needed for making red blood cells (erythropoiesis). Cobalt has some of the same jobs as manganese and zinc. It can replace manganese in activating several enzymes.
- **Phosphorous:** The body needs phosphorus to build and repair bones and teeth, help nerves function, and make muscles contract. Most (about 85%) of the phosphorus contained in phosphate is found in bones. The rest of it is stored in tissues throughout the body. The kidneys help control the amount of phosphate in the blood.
- **Copper:** Copper works with iron to help the body form red blood cells. It also helps keep the blood vessels, nerves, immune system, and bones healthy. Copper also aids in iron absorption [10].
- **Magnesium:** Magnesium is a cofactor in more than 300 enzyme systems that regulate diverse biochemical

reactions in the body, including protein synthesis, muscle and nerve function, blood glucose control, and blood pressure regulation. Magnesium is required for energy production, oxidative phosphorylation, and glycolysis.

- **Iodine:** Iodine is a mineral found in some foods. The body needs iodine to make thyroid hormones. These hormones control the body's metabolism and many other important functions. The body also needs thyroid hormones for proper bone and brain development during pregnancy and infancy.
- **Riboflavin:** Riboflavin (vitamin B2) works with the other B vitamins. It is important for body growth. It helps in red blood cell production. It also aids in the release of energy from proteins.
- **Nicotinic acid:** Also known as vitamin B3 or nicotinic acid, niacin is one of eight B vitamins. Like all B vitamins, niacin plays a role in converting carbohydrates into glucose, metabolizing fats and proteins, and keeping the nervous system working properly.
- **Thiamine:** Thiamin (vitamin B1) helps the body's cells change carbohydrates into energy. The main role of carbohydrates is to provide energy for the body, especially the brain and nervous system. Thiamin also plays a role in muscle contraction and conduction of nerve signals [11].

Physical composition of Ajwain

Ajwain seeds possess many properties such as anti-inflammatory, antioxidants, antimicrobial, antihypertensive, and several such properties. The seeds as well as ajwain water contain numerous health benefits (Table 1).

Chemical composition of Ajwain

Chemical composition of essential oil of two types of ajwain seeds (small and bold) has been determined with GC-MS analysis. Ajwain seeds yield 2 to 5% brownish essential oil with thymol as major components along with following components due to the presence of antioxidant properties (Table 2) [12].

Nutritional properties of ajwain

Ajwain is highly rich in vitamins and minerals such as niacin, thiamine, sodium, phosphorus, potassium, and calcium. It also contains carbohydrates, fatty acids, fibers, proteins, and antioxidants. Ajwain seeds contain an essential oil named – thymol, which gives aromatic fragrances to seeds [13].

Table 1. Composition of carom seeds.

| Components | Quantity (%) |
|---------------------|--------------|
| Moisture | 8.9 |
| Protein | 15.4 |
| Fat (Ether extract) | 18.1 |
| Fiber | 11.9 |
| Carbohydrates | 38.6 |
| Mineral matter | 7.1 |
| Calcium | 1.42 |
| Phosphorus | 0.3 |
| Iron | 14.2 |

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Table 2. Effect of planting dates on main components of *Trachyspermum ammi* L. essential oil.

| Sowing time | (%) Composition | | | | | Essential oil (kg/ha) |
|-------------|------------------|---------------------|----------|----------|------------------|-----------------------|
| | Major components | | | | Minor components | |
| | Thymol | γ -terpinene | p-cymene | B-pinene | | |
| October | 61.85 | 20.16 | 11.79 | 1.93 | 4.27 | 16.01 |
| November | 54.7 | 23.5 | 8.87 | 6.35 | 6.58 | 15.82 |
| December | 54.13 | 19.05 | 9.04 | 3.39 | 14.39 | 14.07 |
| January | 42.78 | 27.35 | 9.1 | 14.04 | 6.73 | 13.98 |
| February | 24.56 | 15.01 | 6.65 | 39.17 | 14.61 | 13.21 |
| March | 30.69 | 12.52 | 4.28 | 5.62 | 46.89 | 10.42 |

Health benefits of ajwain seeds

Ajwain is highly rich in vitamins and minerals such as niacin, thiamine, sodium, phosphorus, potassium, and calcium. It also contains carbohydrates, fatty acids, fibers, proteins, and antioxidants. Ajwain seeds contain an essential oil named – thymol, which gives aromatic fragrances to seeds.

Promote digestion and relieve stomach problems: Ajwain seeds are the most effective home remedy for a stomach problem, it works magically. The active enzymes in ajwain help to boost your digestion by facilitating the release of gastric juices. It also helps to prevent and treat chronic indigestion problems such as gaseous distention, stomach pain, and uneasiness. Some studies suggest that ajwain seeds are great for stomach ulcers and intestinal ulcers.

Fight against infection: Ajwain seeds are powerful anti-bacterial and anti-fungal properties. The active compound of ajwain – thymol helps to inhibit bacterial growth and fungi such as E. coli, Salmonella, and Candida albicans.

Treats common cold and cough: Ajwain works as a decongestant when used for cough and cold. Ajwain relieves the blocked nose by discharging the mucus easily. It has a great power to open up the clogged nasal passages. It also improves the airflow of the lungs hence very useful in asthma and bronchitis.

Enhance good cholesterol levels: Ajwain seeds help to lower down the bad cholesterol and regulate the good cholesterol levels. These seeds contain a high amount of dietary fibers and fatty acids that contribute to healthy levels of cholesterol.

Reduce blood pressure: The thymol in the seeds helps to manage blood pressure. An animal study suggests that ajwain seeds also have a calcium channel blocking effect. It prevents calcium from entering heart cells and blood vessel walls that help to lower blood pressure.

Relieve joint pains: Ajwain seeds possess two properties – anti-inflammatory and anti-microbial. These properties may help to combat the symptoms of arthritis. It reduces the redness, swelling, and pain of joints. You can apply the ajwain seed paste on the affected joints or soak in a tub of hot water with a handful of ajwain seeds.

Cure tooth and ear pains: Tooth and ear pains are the two severe types of pains among other pains. Ajwain oil acts magically on ear pain. For tooth-ache, simply gargle with lukewarm water with ajwain seeds and a pinch of salt.

Ajwain water benefits

There are several ways of consuming ajwain, drinking ajwain water is one of the best ways. Ajwain water is very beneficial, particularly for women.

Aids weight loss: Ajwain water is highly recommended in Ayurveda to manage weight. It helps to cleanse your digestive system and promote metabolism that leads to weight loss. To prepare ajwain water, roast 2 tablespoons of ajwain seeds and add it to boiling water. Stir this mixture till it changes its color to brown. Let it cool then and strain it before use. Drink this water daily for good results. You can add a tablespoon of honey for flavor.

Useful for females: Ajwain water helps to clean your uterus and stomach to regularize your periods. It also helps to cure the indigestion problem in pregnant women.

Relieve the stomach discomfort in babies: Ajwain water can reduce the gaseous distention of the abdomen in babies and relieve the discomfort.

An example on evaluation of antiviral activity of essential oil of ajwain against virus

Japanese encephalitis is a leading form of viral encephalitis, prevalent mostly in South Eastern Asia caused by Japanese Encephalitis Virus (JEV). It is transmitted by the mosquitoes of the Culex sp. The disease affects children and results in 50% result in permanent neuropsychiatric disorder. There arises a need to develop a safe, affordable, and potent anti-viral agent against JEV. This study aimed to assess the antiviral activity of ajwain (*Trachyspermum ammi*: Umbelliferae) essential oil against JEV.

Materials and methods: Ajwain oil was extracted by distillation method and in vitro cytotoxicity assay was performed in vero cell line by 3-(4, 5-dimethylthiazol-2-yl)-2, 5-diphenyltetrazolium bromide (MTT) assay method. JEV titer was determined by plaque assay and in vitro antiviral activity of ajwain oil was quantified by the Plaque Reduction Neutralization Test (PRNT).

Results: Cytotoxic concentration of the oil was found to be 1 mg/ml by MTT assay. The titer of the virus pool was found to be 50×10^7 PFU/ml. we observed 80% and 40% virus inhibition in 0.5mg/ml of ajwain oil by PRNT method in preexposure treatment and postexposure treatment (antiviral activity), respectively.

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Conclusion: Our data indicate ajwain oil has potential in vitro antiviral activity against JEV. Further, the active biomolecule will be purified and evaluated for anti-JEV activity and also to scale up for in vivo trial to evaluate the efficacy of ajwain oil in future [14].

Facts about carom seeds

- Keep them away from humidity and also from direct sunlight.
- Store them in air-tight bottle in a cool and dry place.
- People with liver disease and hyperacidity should avoid this herb.
- Carom seeds cannot be stored for a long time.
- Avoid over consumption. It can lead to nausea, vomiting, skin irritation, allergy and headache in some people [15].

Contraindications

Generally, if consumed in moderate amounts ajwain do not cause any side effects. However, if overused it may show some adverse effects in a few people. Overuse may worsen stomach ulcers and it should be avoided by people suffering from diverticulitis, liver diseases and ulcerative colitis. Always consult a doctor in case of side effect.

Conclusions

Ajwain has been well known as an Ayurvedic spice since ancient times. It has traditionally been used as a medicinal plant for the treatment of indigestion and dyspepsia and many other gastric disorders. Ajwain is also rich in moisture, protein, carbohydrates, fat, minerals, fiber, calcium, phosphorus, iron, carotene, thiamine, riboflavin and niacin. Chemical composition of essential oil and presence of variety of diverse constituents in it are responsible for a wide range of biological properties. We can't cure properly to Covid but we can cure the symptoms through this kind of herbal remedy primarily.

Carom seed water is known as a marvel in Ayurveda. It helps keep the digestive tract clean and cures problems of the stomach. It is also known to help for regularizing irregular period. It reduces gastric problems, providing immediate relief. It is known to improve metabolism as well. For best results from this water, soak a teaspoon of carom seeds in a glass of water overnight. Strain the water the next morning and drink it the first thing in the morning, on an empty stomach.

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