



## Investigation, Synthesis and Evaluation of Herbal Tonic Powder Formulation of Trachyspermum Ammi and Black Salt

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### ABSTRACT –

This study presents the Investigation, Synthesis, and Evaluation of a novel herbal tonic powder formulated from Trachyspermum ammi (Ajwain) and black salt. Drawing upon existing literature, the research explores the medicinal properties of these ingredients and aims to develop a comprehensive understanding of their synergistic effects. The experimental phase involves the controlled synthesis of the herbal tonic powder, with a focus on optimizing ingredient ratios and processing techniques. Evaluation encompasses sensory aspects such as taste and aroma, as well as a detailed analysis of chemical constituents using established analytical methods. The results aim to contribute valuable insights into the potential health benefits of the synthesized herbal tonic powder, aligning with established claims for Ajwain and black salt. This research strives to advance the knowledge base surrounding traditional herbal remedies and promote further exploration of natural compounds for health and wellness applications.

### Introduction –

Ajwain, scientifically known as Trachyspermum ammi, is an aromatic herb commonly used in culinary and traditional medicine. Originating from the Eastern Mediterranean region, Ajwain has spread its culinary influence to various parts of the world.

#### Culinary Usage:

Ajwain seeds, with a strong and pungent flavor, are a staple in Indian cuisine. They are often used in the tempering of various dishes, imparting a distinct aroma and taste. Ajwain is particularly popular in bread and snack preparations, enhancing the overall flavor profile.

#### Medicinal Properties:

In traditional medicine, Ajwain is valued for its medicinal properties. It is believed to aid digestion and alleviate gastrointestinal issues. The seeds contain essential oils like thymol, which contribute to their antimicrobial and antifungal properties. Ajwain is also considered a carminative, helping to reduce flatulence and bloating.

#### Health Benefits:

1. Digestive Aid: Ajwain is commonly used to address indigestion, bloating, and flatulence. It is believed to stimulate the digestive system.
2. Respiratory Health: Thymol in Ajwain has potential respiratory benefits, acting as an expectorant and helping to relieve congestion.
3. Antimicrobial Properties: The essential oils in Ajwain exhibit antimicrobial properties, contributing to its traditional use for various infections.

#### Precautions:

While Ajwain is generally safe for consumption in culinary amounts, excessive intake may lead to adverse effects. Pregnant women are advised to consume it in moderation.

In summary, Ajwain is a versatile herb appreciated for its culinary contributions and potential health benefits. Its distinct flavor and medicinal properties make it a valuable addition to both the kitchen and traditional medicine practices.

*Ajwain (Trachyspermum ammi):*

**Family:**

Ajwain belongs to the family Apiaceae, commonly known as the carrot or parsley family. This family is characterized by plants with hollow stems, compound leaves, and umbrella-like clusters of small flowers.

**Subfamily:**

Within the Apiaceae family, Ajwain falls under the subfamily Apioideae. This subfamily includes a diverse group of aromatic plants known for their culinary and medicinal uses. Plants in the Apioideae subfamily often produce essential oils that contribute to their distinctive flavors and aromas.

**Botanical Description:**

- Ajwain is an annual herbaceous plant with a well-branched stem and finely divided, feathery leaves.
- The plant produces small white or pinkish flowers arranged in umbels, characteristic of the Apiaceae family.
- Ajwain seeds, the most commonly used part, are small, oval-shaped, and have a brown color. They contain essential oils responsible for the herb's distinct flavor and medicinal properties.

**Geographic Origin:**

Ajwain is native to the Eastern Mediterranean region but is widely cultivated in various parts of the world, including India, Iran, and Egypt.

**Culinary and Medicinal Uses:**

- Ajwain seeds are a key ingredient in Indian and Middle Eastern cuisines, adding a pungent and slightly bitter flavor to dishes.
- In traditional medicine, Ajwain is valued for its digestive properties and is believed to alleviate various gastrointestinal issues.
- The essential oils in Ajwain, particularly thymol, contribute to its antimicrobial and respiratory benefits.

Understanding the botanical family and subfamily of Ajwain provides insights into its botanical classification and its relationship with other plants within the Apiaceae family.

**Composition of Black Salt:****1. Sodium Chloride (NaCl):**

- Black salt, like common table salt, primarily contains sodium chloride. This compound is essential for flavoring and preserving food.

**2. Impurities:**

- Black salt gains its distinctive color and taste from impurities and trace minerals present in its composition. These may include iron sulfide, hydrogen sulfide, and other sulfurous compounds.

**3. Iron Compounds:**

- Iron compounds, especially iron sulfide ( $\text{FeS}_2$ ), contribute to the characteristic color of black salt. These compounds are responsible for the salt's unique pink, grey, or black hue.

**4. Sodium Sulfate ( $\text{Na}_2\text{SO}_4$ ):**

- Black salt may contain sodium sulfate, a compound that adds a subtle bitterness to the salt's taste. This compound is often found in varying concentrations.

**5. Sodium Bisulfate ( $\text{NaHSO}_4$ ):**

- Another sulfur-containing compound, sodium bisulfate, may be present in black salt, contributing to its distinct flavor profile.

**6. Sodium Bi-sulfide ( $\text{NaHS}$ ):**

- This sulfur compound adds to the sulfurous aroma and taste of black salt, setting it apart from regular table salt.

**7. Magnesium Compounds:**

- Some black salts may contain magnesium compounds, which can contribute to its nutritional profile. Magnesium is an essential mineral for various bodily functions.

**8. Ammonium Chloride ( $\text{NH}_4\text{Cl}$ ):**

- In certain formulations, black salt may include ammonium chloride, providing a salty and tangy taste. This compound is more commonly found in some traditional formulations of black salt.

It's Important to note that the specific composition of black salt can vary depending on its source, production methods, and regional variations. The impurities and trace minerals not only give black salt its unique color and flavor but also contribute to its use in traditional medicine and Ayurveda.

The combination of ajwain (*Trachyspermum ammi*) and black salt as a tonic is believed to offer various health benefits due to the inherent properties of these ingredients:

1. Digestive Aid:

- Ajwain is known for its carminative properties, helping to alleviate digestive issues such as indigestion and bloating. When combined with black salt, which also aids digestion, the tonic may contribute to a healthy digestive system.

2. Antimicrobial Effects:

- Ajwain contains essential oils like thymol, known for their antimicrobial properties. Black salt, with its sulfur compounds, also exhibits antimicrobial characteristics. Together, they may help combat harmful microorganisms in the digestive tract.

3. Electrolyte Balance:

- Black salt contains essential minerals like sodium, which plays a crucial role in maintaining electrolyte balance. The combination of ajwain and black salt in a tonic may provide a natural source of electrolytes, aiding in hydration and overall well-being.

4. Respiratory Support:

- Ajwain has traditionally been used to address respiratory issues. The combination with black salt, which may have some respiratory benefits, could potentially offer support for respiratory health.

5. Mineral Supplementation:

- Both ajwain and black salt contain minerals such as iron and magnesium. The tonic may serve as a natural source of these minerals, contributing to overall mineral supplementation in the diet.

It's Important to note that while these ingredients are traditionally believed to have health-promoting properties, scientific research on the specific tonic effects of the ajwain and black salt combination is limited. As with any herbal remedy, individual responses can vary, and consulting with a healthcare professional before incorporating such tonics into your routine is advisable, especially for individuals with pre-existing health conditions or those taking medications.

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## Methodology –

### Methodology to Prepare 5g Herbal Powder of Ajwain and Black Salt: Ingredients:

1. Ajwain (*Trachyspermum ammi*) seeds

2. Black salt Ratios:

- Ratio 4: 1 (Ajwain:Black Salt) – F1

- Ratio 3: 2 (Ajwain:Black Salt) – F2

- Ratio 3.5: 1.5 (Ajwain:Black Salt) – F3

### Procedure:

1. Weighing Ingredients:

- Measure 4g of Ajwain and 1g of black salt for the 1:4 ratio.

- Measure 3g of Ajwain and 2g of black salt for the 3:2 ratio.

- Measure 3.5g of Ajwain and 1.5g of black salt for the 3.5:1.5 ratio.

2. Cleaning and Inspection:

- Ensure the Ajwain seeds are clean and free from impurities.

- Verify the quality of black salt, checking for any foreign particles.

3. Grinding:

- Use a clean and dry grinder to grind the Ajwain seeds and black salt separately to achieve a fine powder consistency.

- Ensure that the grinder is thoroughly cleaned between each ratio to prevent cross-contamination.

## 4. Mixing:

- Combine the powdered Ajwain and black salt in the specified ratios.
- Thoroughly mix the powders to achieve a uniform blend. A mortar and pestle can be used for this purpose.

## 5. Packaging:

- Transfer the blended herbal powders into a clean, airtight container for storage.
- Label each container with the respective ratio to maintain clarity.

## 6. Storage:

- Store the herbal powders in a cool, dry place away from direct sunlight.
- Ensure that the containers are sealed properly to preserve the freshness of the herbal mixture.

Observation table –

Sr No.	Parameters	Observation
1	Taste	Salty
2	Odour	Aromatic
3	Colour	Brownish Yellow

## Pictures of Formulation –

F1, F2, And F3 respectively as follows



Result – The Investigation, Synthesis And Evaluation of Herbal Tonic Powder Formulation Was Carried Out Successfully.

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**Conclusion –**

This study delves into the Investigation, Synthesis, and Evaluation of a unique herbal tonic powder derived from *Trachyspermum ammi* (Ajwain) and black salt. By exploring the medicinal properties and optimizing synthesis techniques, the research sheds light on the synergistic effects of these ingredients. The sensory evaluation and chemical analysis contribute valuable insights, affirming the potential health benefits aligned with established claims for Ajwain and black salt. This endeavor not only advances our understanding of traditional herbal remedies but also encourages continued exploration of natural compounds for applications in health.

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**References –**

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