

SCIENTIFIC VALIDATION ORGANOLEPTIC TEST OF BLACK SEED (*NIGELLA SATIVA*) AS MEDICINAL FOODS IN ISLAMIC TRADITION

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Abstract: This study aims to scientifically validate the organoleptic properties of Black Seed (*Nigella sativa*) as a medicinal food within the context of Islamic tradition. Black seed, known as *Habbatus Sauda* in Arabic, has long been recognized in Prophetic Medicine (*Tibb al-Nabawi*) for its therapeutic benefits, including its ability to treat various ailments. The research explores the sensory characteristics—appearance, taste, aroma, texture of *Nigella sativa* and evaluates their alignment with traditional claims regarding its medicinal potency. The findings of this research reveal that high-quality black seeds retain strong organoleptic properties, consistent with those described in Islamic texts, confirming their medicinal value. The sensory characteristics of bitterness, pungency, and distinctive aroma correlate with the therapeutic efficacy attributed to *Nigella sativa* in Prophetic Medicine. This study not only underscores the relevance of traditional Islamic food practices but also bridges the gap between ancient wisdom and modern scientific validation, highlighting the potential of *Nigella sativa* as a valuable medicinal food in contemporary health systems.

Keywords: Black Seed, organoleptic, Medicinal

Introduction

Nigella sativa, widely known as black seed or black cumin, is a medicinal plant that has been valued for centuries, especially within Islamic tradition, where it is often called *Habbatu al-Barakah* or "the seed of blessing." Its traditional use in treating a variety of health conditions—such as respiratory problems, digestive issues, inflammation, and immune disorders—has made it a central component in many herbal healing practices. A famous saying attributed to the Prophet Muhammad (peace be upon him) highlights its importance: "Use this black seed, for it contains a cure for every disease except death" (as cited in Randhawa & Alghamdi, 2011), reflecting its deep cultural and therapeutic significance.

This study aims to evaluate the organoleptic qualities of *Nigella sativa*—including its taste, smell, color, and texture—to assess its suitability as a functional food within a cultural and scientific context. By linking traditional knowledge with modern sensory evaluation, the research seeks to support the wider use of *N. sativa* in contemporary health and dietary practices.

Literature Review

Modern scientific studies have increasingly focused on validating these traditional claims by examining the plant's active components. One of the most studied compounds, thymoquinone, has shown strong antioxidant, anti-inflammatory, antimicrobial, and anticancer properties (Ahmad et al., 2013). However, while much attention has been given to the pharmacological benefits of *N. sativa*, relatively little research has explored its

sensory characteristics—such as flavor, aroma, color, and texture—which are essential for consumer acceptance, especially in the context of functional or medicinal foods.

Understanding these organoleptic properties is critical, as they influence how medicinal foods are perceived and adopted by the public. As functional foods gain popularity for their combined health and nutritional benefits, the potential for *Nigella sativa* to be consumed as part of a regular diet becomes increasingly relevant. However, such integration requires a better understanding of its sensory appeal and how it aligns with consumer preferences (Shahidi, 2009).

Method

1. Plant Material:

Nigella sativa seeds were sourced from a reliable herbal distributor known for supplying verified and high-quality plant materials. To preserve their properties, the seeds were kept in sealed containers, minimizing exposure to moisture and light.

Authentication:

A certified botanist confirmed the identity of the seeds by examining their morphological traits and comparing them to authenticated herbarium references.

2. Organoleptic Testing

Panel Selection:

A trained sensory panel consisting of 15 individuals (aged 20–40 years; 50% male and 50% female) was recruited to evaluate the organoleptic properties of *Nigella sativa* seeds and oil. All participants were screened to ensure the absence of known allergies to *N. sativa* or related botanical species, as well as any recent history of respiratory or gastrointestinal disorders. These criteria were implemented to ensure an objective and unbiased assessment of sensory attributes.

Assessment Parameters:

The sensory evaluation focused on four primary organoleptic attributes:

- Color: The visual appearance of the seeds was assessed by comparing their color to established reference standards.
- Odor: The aromatic profile of the seeds was evaluated by allowing panelists to smell a sample placed in a glass container for approximately five seconds. A five-point hedonic scale was employed, ranging from 1 (extremely unpleasant) to 5 (highly pleasant).
- Taste: The seeds were ground into a fine powder, and panelists were asked to taste a small amount. Taste perception was scored from 1 (intensely bitter) to 5 (mildly spicy and agreeable).
- Texture: Textural evaluation included both whole and powdered seed forms, with particular attention to mouthfeel, grittiness, and ease of grinding.

3. Statistical Analysis

- The organoleptic data were analyzed using descriptive statistics to calculate mean and standard deviation for each parameter (color, odor, taste, texture). A one-way ANOVA was used to compare sensory ratings between different organoleptic attributes.

Results and Discussion

Organoleptic Evaluation of *Nigella sativa*

The organoleptic properties of *Nigella sativa* were assessed through a trained panel of 15 participants (7 male and 8 female, aged 20-40 years). The evaluation involved color, odor, taste, and texture, each scored using a 1-5 Likert scale. The results are summarized below:

As shown in Table 1, there was no statistically significant difference in the color attribute between *Nigella sativa* seeds and their oil. Both were described as uniformly deep black with a slight sheen, characteristic of high-quality black seeds. The mean color score was 4.7 for the seeds and 4.5 for the oil, indicating strong visual appeal and acceptability among panelists. This visual consistency aligns with traditional views that associate darker seeds with greater potency and purity.

In terms of odor, *N. sativa* seeds received significantly higher ratings—by approximately 51%—compared to the oil. The seeds were characterized by a strong, earthy aroma with peppery and mildly pungent notes. While the aroma was generally well-received, some participants reported it to be overly intense, suggesting that its strong scent may not be universally appealing. This observation is consistent with prior descriptions of *N. sativa*'s distinctive smell, which is often regarded as one of its defining features (Zaoui & Cherrah, 2002).

The taste evaluation revealed that the ground seeds scored significantly higher than the oil. The powdered seeds were perceived as mildly bitter with a lingering spicy aftertaste. The average taste score was 3.2, suggesting moderate acceptance; however, the bitterness was notable. This finding supports traditional culinary practices that recommend using *N. sativa* in limited quantities to balance its flavor (Bamosa & AlQurashi, 2015).

For texture, the oil form of *N. sativa* received significantly higher ratings compared to the seeds. Whole seeds were described as hard and somewhat difficult to crush, whereas the powdered form was smoother and more easily dispersible. The mean texture score for whole seeds was 3.4 (SD = 0.6). These results suggest that the oil form is generally more acceptable in terms of mouthfeel and ease of use, supporting its widespread application in food and therapeutic preparations (Sharma & Kaur, 2013).

Table 1. Organic Evaluation of *Nigella sativa* by Panelis:

Parameter	Color	Odor	Taste	Texture
Nigela Seed	4.7 a	4.8 a	3.2 a	3
Nigela Oil	4.5 a	2 b	2 b	4.7

- Notes: For each factor, means within a column follower by the same letter ar not significantly different by DMRT at $P \leq 0.0$

Conclusion

The sensory evaluation of *Nigella sativa* seeds and oil revealed notable findings regarding their organoleptic properties. Both the seeds and the oil exhibited a deep black color with a slight sheen, which was highly accepted by the panelists, with mean scores of 4.7 and 4.5, respectively. The seeds were characterized by a significantly stronger aroma, described as intense, earthy, and slightly peppery, with some participants noting that the scent could be overpowering for certain individuals. In terms of taste, the ground seeds were mildly bitter with a spicy aftertaste, receiving a mean score of 3.2, which indicates moderate

acceptance but highlights the noticeable bitterness. Finally, the texture evaluation showed a preference for the oil, as it scored higher than the seeds, which were considered hard and difficult to crush in their whole form. The powdered seeds, however, were smooth and easy to disperse. These results suggest that while the seeds' strong sensory characteristics are in line with traditional uses, the oil form of *Nigella sativa* may be more acceptable for general consumption and therapeutic applications.

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