

Unveiling the Diagnostic Potential of *Nafth* (Sputum): A Synthesis of Unani and Contemporary Knowledge

(An Analytical Review of *Nafth* in Tibb-E-Unani and Modern Pathology)

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Abstract: *Nafth* (Sputum), a mixture of mucus, cellular debris, and saliva, is expelled during coughing, providing important insights into respiratory health. *Nafth* is an Arabic word used in the Unani system of medicine, which refers to sputum. Sputum's properties, like; quantity, colour, consistency, smell, and ease of expulsion, provide important diagnostic hints. Green sputum denotes coldness, while *Al-Nafth al-Asfar* (yellow sputum) suggests extra bile and *Hararat* (heat). At the same time, *Al-Nafth al-Muntin* (foul-smelling phlegm) indicates '*Ufunat* (infection). *Al-Nafth al-Ghaliz* (thick sputum) may indicate accumulation. Unani scholars correlate sputum characteristics with conditions like pneumonia, pleurisy, tuberculosis, and chest abscesses. Classical texts, including Hippocratic writings, detail the implications of spherical clots and foul odour as signs of advanced disease. Recovery is observed when all the characteristics of sputum come to an optimum level. By knowing the normal and abnormal sputum properties, anyone can understand the cause, progress and diagnosis of diseases. This study will guide the researcher in further research related to respiratory diseases.

Keywords: *Sputum, Respiratory Diseases, Nafth, Unani Medicine, Tashkhis.*

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I. INTRODUCTION

Infections of the lower respiratory tract are quite common in the general population, but they are more common in older people, people with chronic illnesses and people with weakened immune systems. Cultures of respiratory tract secretions or the isolation of a suitable organism from blood (pleural fluid) cultures are used to make the etiologic diagnosis of the causative pathogen. [1] Sputum is the respiratory tract's production of mucus. [2] It is a combination of saliva, microorganisms, cellular debris, and tracheobronchial, nasal, laryngeal and oral secretions. [3-7]

Normally, ciliary movement removes around 100 ml of bronchial secretion every day from the lung's airways through the larynx, and unconscious swallowing disposes of it in the alimentary tract. Information obtained from laboratory methods is frequently at least as significant as that obtained from the patient's description of the sputum's mode of production, quantity and quality, as well as the doctor's observations, particularly about its outward appearance. [8] Sputum, also called "Balgham" in Unani medicine, is one of the main body humors and is a representation of phlegm. It is linked to the chilly and wet properties and is essential to preserve the equilibrium of the body's four humours:

Balgham (phlegm), *Safra*, (yellow bile) *Sawda'* (black bile) and *Dam* (blood) produced in the stomach and lungs, balgham protects the respiratory system by capturing dust, bacteria, and foreign objects. [9] "Sputum" refers to the fluid that is expelled from the throat during coughing and is known as "*Nafth*." [10]

II. MATERIALS AND METHODS

This study was conducted using a qualitative, narrative review approach to synthesize traditional Unani medical knowledge with contemporary biomedical understanding regarding the diagnostic potential of *Nafth* (sputum). Relevant classical Unani texts and modern scientific literature were consulted to explore the significance, examination techniques, and interpretative value of sputum in diagnosing respiratory and systemic diseases.

III. SIGNIFICANCE OF SPUTUM

Significance of sputum is related to changes in its color, consistency, smell, amount, and ease of ejection. [11] Through *Nafth*, one can ascertain the state of the disorders affecting the chest, including *Dhat al-Janb* (pleurisy), *Dhāt al-Ri'a* (pneumonia) chest ulcers, and *Dubayla* (abscesses) etc that develop within the chest flesh as a result of prolonged catarrh. [11,12]

It is thought that an imbalance or excess of phlegm can lead to a number of health problems, including skin disorders, digestive disorders, and respiratory ailments. Sputum's color, consistency, and volume offer important diagnostic clues in Unani medicine. For example, yellow or green sputum indicates illness or internal heat, but clear sputum is frequently linked to cold imbalances. Sputum that is thick is a sign of phlegm or moisture buildup. [13] Gross findings of sputum given in Table-1 [1,3]

IV. INFERENCE CHARACTERISTICS OF SPUTUM

- The inference of *Nafth*, can be determined through these factors such as; [14]
- *Miqdār* (Quantity),¹² *Lawn* (Color), *Qiwām* (Consistency), *Bu* (Smell) [11,12]
- *Dhawq* (Taste), Ease or difficulty of expulsion, and Shape of sputum. [12,14]

➤ Quantity

Sometimes the patient expectorates a lot of *Nafth* (phlegm), sometimes they expectorate a little, sometimes they expectorate a moderate amount, and occasionally they don't expel anything at all. *Al-Nafth al-Mu'tadil al-Miqdār* (A considerable amount of sputum) signifies that the disease is in its starting stage and incomplete action of the disease matter in the lungs.

An excess amount of sputum indicates that the disease is in its advanced stage and complete concoction of matter. *Al-Nafth al-Qalīl al-Miqdār* (less amount of sputum) indicates that the illness has advanced from its early stage to the stage of advancement and that the body has only just begun to

mature the matter. However, it indicates that the sickness is still in its early stages when the patient coughs up nothing. [11,14]

➤ Colour

A surplus of *Safra* (bile) and the severity of the heat are indicated by *Al-Nafth al-Asfar* (yellow sputum) Extreme cold and the disturbance of natural heat are indicated by green phlegm (*Harārat Gharīzī*). Redness combined with white sputum denotes *Sill* (TB), while *Al-Nafth al-Ahmar* (bright red sputum) signifies either an excess of blood or a rupture in a vein in the *Halaq* (throat), *Hanjara* (larynx), *Ri'a* (lungs) or other respiratory organs. ¹⁴ Heat and blood red sputum may be due to excess heat and blood in the body. While completely *Al-Nafth al-Aswad* (black sputum) denotes combustion and substance decomposition, *Al-Nafth al-Kamid* type of sputum is a symptom of excess cold and immaturity. [11,12]

➤ Consistency

Sputum can have a thick or thin consistency. If the consistency is thin that reflects the maturation process started or the process is still in its early stages. [11,12] *Al-Nafth al-Ghalīz* (thick sputum) occasionally indicates lack of maturation. In respect of earlier condition of sputum thin sputum is difficult to eliminate because it cannot adequately collect and adhere to the helping organs of the lungs. Similarly, dense matter breaks into parts and becomes challenging to remove smoothly.

A thin, pus-like sputum is a bad sign that indicates the failure of the lungs. Foamy sputum is a sign of tuberculosis. [11] sputum can occasionally have a range of consistency, from thin to thick. This kind of consistency suggests that the concoction of the matter is completed, which is a good sign. [12]

➤ Smell

As a sign of the severity of the infection, *Al-Nafth al-Muntin* (foul-smelling) sputum is regarded as extremely dangerous and, *Al-Nafth al-Ghayr al-Muntin* (odourless sputum) is better sign. [11,12,14]

➤ Taste

Sweetness of sputum indicates either a reasonably balanced sputum or an overabundance of blood. [14]

➤ Ease or difficulty of expulsion

Certain sputum can be evacuated readily and without coughing. This shows that the body's strength is strong and that the maturation (*Nuzj*) is complete. However, delayed and difficult expulsion of sputum indicates that the body is feeble and maturation has not taken place completely. [12,14] In diseases such as *Dhāt al-Ri'a* (pneumonia) and *Dhat al-Janb* (pleurisy), the rapid and easy expulsion of sputum indicates recovery, robust vitality, and the possibility of a speedy resolution of the ailment. [14]

➤ Shape

Certain types of sputum have varying shapes but are often present, which suggests that the matter is thin and that

there is little heat for it to mature. The expulsion of sputum is regarded as dangerous.

In the book *Ibzenia*, Hippocrates described how the appearance of spherical clots in *Al-Mukhāt* (expectorated mucus), especially in an *Al-Hummā* (feverish person), indicates the existence of *Sill* (TB). Additionally, he reported seeing numerous patients who contacted tuberculosis after repeatedly spitting out spherical clots (*Sill*).

Hippocrates also observed that circular shape of sputum with fever may indicate mental disturbances. [11,12,14] Thin, foul-smelling, and difficult to evacuate sputum with severe coughing are the worst kinds of sputum. Its colour—black, green, deep yellow, or sharp—, as well as its *min Rih al-Nafth* (foul odour) are all warning indications of worsening disease and a death sentence for the sufferer. [11,12]

Table-1 Tabular Presentation of Gross Findings of Sputum [1,3]

S.N	FEATURES	APPEARANCE	PATHOLOGICAL CONDITION
1	VOLUME	Small amounts	Lung abscess , Pneumonia , Tuberculosis
		Copious amounts	Bronchiectasis , Bronchopleural fistula
2	COLOUR	Bloody sputum	Hemoptysis
		Rusty sputum (Prune-juice)	Pneumococcal pneumonia
		Purulent sputum (yellow, green, dirty-grey)	Color alone does not distinguish bacterial infection
3	TURBIDITY	Frothy sputum (Air bubbles, Haemoglobin)	Pulmonary oedema
		Foamy, clear material	Saliva , Nasal secretions
4	VISCOSITY	Bloody gelatinous sputum (Currant-Jelly)	Klebsiella pneumonia , Pneumococcal pneumonia
		Stringy Mucoïd Sputum	Follows asthma exacerbation
		Cloudy, Mucoïd Sputum	Chronic bronchitis
		Three layered appearance (Stagnant, Purulent Sputum)	Bronchiectasis , Lung Abscess
5	FECULENT ODOR		Anaerobic infection , Bronchiectasis , Lung Abscess
6	CONSISTENCY	Serous	Broncho-alveolar carcinoma , Pulmonary oedema
		Mucoid	Chronic bronchitis , Chronic asthma
		Muco-purulent or purulent	Bacterial infection
		Bronchial asthma	Eosinophils , desquamated epithelium , Curschmann spiral , Charcot-Leyden crystals , Creola bodies

V. DISCUSSION

Sputum (Nafth), as interpreted in both contemporary and Unani medical systems, holds substantial diagnostic significance in respiratory disorders. Modern medicine emphasizes the cytological, microbiological, and physical examination of sputum to detect conditions such as pneumonia, tuberculosis, bronchiectasis, and lung abscess. The color, volume, viscosity, and odor of sputum provide essential clues to the underlying pathology.

In Unani medicine, sputum—referred to as *Balgham*—is not only a bodily humour but also a key diagnostic indicator reflecting humoral imbalances. Unani scholars, such as Jurjani and Majoosi, detailed the characteristics of Nafth (quantity, color, consistency, smell, taste, and expulsion ease), associating these with specific disease states like *Dhat al-Ri'a* (pneumonia), *Dhat al-Janb* (pleurisy), and *Dubayla* (abscess).

This comparative insight underlines the convergence of traditional and modern interpretations. For instance, foul-smelling, thick, coloured sputum indicates infection in both systems, while clear, odourless sputum usually implies a less severe condition. The integration of such diagnostic wisdom can enhance clinical assessments and bridge holistic approaches with evidence-based practice.

VI. CONCLUSION

Sputum examination remains a vital tool for diagnosing respiratory illnesses. Both modern and Unani systems recognize its diagnostic value based on observable features such as color, consistency, and odour. By understanding Nafth through both lenses, clinicians can gain a more nuanced perspective, enriching diagnostic accuracy and promoting integrative care in respiratory medicine.

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Conflict of Interest

Declare no conflict of interest.

Authors Contribution

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