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A COMPARATIVE STUDY OF ḤAWĀS KHAMSA BĀTINAH (FIVE INTERNAL SENSES) IN THE LIGHT OF UNANI AND MODERN PERSPECTIVE

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ABSTRACT

The concept of Ḥawās Khamsa Bātinah (Five Internal Senses) represents a fundamental pillar of Unani philosophy, providing a detailed framework for understanding the internal, cognitive and perceptual functions of the brain (Dimāgh). These internal faculties Hiss Mushtarak (common sense), Khayāl (faculty of awareness/imagination), Wahm (faculty of apprehension/estimation), Hāfizah (faculty of memory), and Mutasarrifah (faculty of modification/cognitive power) were meticulously described by eminent Unani scholars such as Ibn Sīnā and Rāzī, who viewed them as coordinated processes essential for human thought, behaviour, and consciousness. Although modern neuroscience is grounded in different anatomical and physiological paradigms, it identifies parallel functions within neural circuits involving the thalamus, limbic system, prefrontal cortex, association areas, and hippocampal networks. These modern structures collectively mediate sensory integration, emotional processing, memory formation, and higher cognitive functions. By examining the conceptual overlaps and divergences between internal senses of Unani and contemporary neuroscientific models, this study aims to provide a comprehensive comparative understanding that bridge traditional medical philosophy with modern physiological evidence, underscoring the continued relevance of classical Unani thought in interpreting complex brain functions.

KEYWORDS: Ḥawās Khamsa Bātinah, Unani Philosophy, Neuroscience, Cognitive Function.

INTRODUCTION

Unani medicine is one of the oldest systems of healing, rooted in classical Greek philosophy and later refined by eminent scholars. Within its theoretical structure, Unani physicians categorized the human faculties (Quwā) into three major groups: Quwā-e-Haywāniyah (vital faculties), Quwā-e-Nafsāniyah (psychic faculties), and Quwā-e-Tabi'iyah (natural faculties). Among these, Quwā-e-Nafsāniyah is particularly significant, as it governs the sensory, cognitive, and intellectual functions attributed to the brain (Dimāgh). Fundamental to this field is the concept of Ḥawās Khamsa Bātinah (five internal senses) which function as internal perceptive mechanisms responsible for interpreting, integrating, and transforming information received from the Ḥawās Khamsa Zāhirah (five external senses). Understanding these internal faculties is fundamental to neuroscientific concept of Unani system and reflects a highly sophisticated pre-modern interpretation of perception, imagination, judgment, memory, and cognition.[1,2,3,4]

In modern physiology, comparable functions are associated with a complex network of specialized neural structures that collectively mediate perception, emotion, memory, and higher mental processes. The thalamus serves as the primary relay station for most sensory modalities, directing signals to the appropriate cortical regions for conscious awareness. The limbic system including the amygdala, hypothalamus, and cingulate gyrus plays a crucial role in emotional processing, instinctive responses, motivation, and affective behaviour. The hippocampus is essential for memory consolidation, storage, retrieval, and spatial learning. The association cortices across the parietal, temporal, and

occipital lobes integrate multisensory information and support conceptual understanding, imagination, and the formation of complex perceptual experiences. Additionally, the prefrontal regions of the cerebral cortex are responsible for executive functions such as planning, decision-making, problem-solving, and behavioural regulation. Together, these interconnected brain areas form dynamic neural circuits that parallel many of the cognitive and emotional functions described in the Unani framework of the internal senses.[9,10,11,12]

Therefore, a comparative analysis of Unani and modern concepts offers valuable insights, bridging traditional philosophical perspectives with contemporary neuroscientific knowledge, and demonstrating the continued relevance of Unani thought in advancing our understanding of brain function and human behaviour.

LITERATURE REVIEW

Unani perspective

Unani scholars have described the Dimāgh (brain) as the seat of Rūḥ-e-Nafsānī (psychic spirit), which governs many functions like perception (Idrāk), thought (Tafakkur), memory (Hifz), and voluntary movement (Afʿāl Irādiyya). Classical Unani physicians such as Ibn Sīnā (Avicenna), Rāzī (Rhazes), and Ismāʿīl Jurjānī regarded the brain as one of the principal organs (Aʿḍā Raʾīsa) essential for maintaining the integrity of the human body and mind. The Dimāgh is not only an anatomical structure but also a functional center of intellectual and emotional processes, mediating between the sensory organs and the faculties of thought and volition.[1,2]

According to Unani theory, the brain is divided into three ventricles (Baṭoon-e-Dimāgh) anterior (Baṭn Muqaddam Dimāgh), middle (Baṭn Ausat Dimāgh), and posterior (Baṭn Muʾakhkhar Dimāgh) each associated with distinct Quwā Bātinah (internal faculties). These faculties operate in a coordinated manner to ensure sensory integration, imagination, reasoning, and memory formation.

1. Hiss Mushtarak (Common Sense)

The faculty of Hiss Mushtarak resides in the Baṭn Muqaddam (anterior ventricle) of the brain and functions as the integrative centre for all external sensory inputs. It receives impressions from the five external senses (Hawās Khamsa Zāhirah) sight, hearing, smell, taste, and touch and unifies them into a single perceptual experience. Ibn Sīnā in Al-Qānūn fī'l-Ṭibb describes this faculty as the "common sensorium" where external stimuli are first gathered and synthesized for higher processing.[1] For example, when perceiving an object like an apple, Hiss Mushtarik integrates the colour, texture, and smell into one coherent perception, forming the basis for subsequent cognitive interpretation.

2. Khayāl (Faculty of Awareness/Imagination)

Khayāl, located near the Baṭn Muqaddam Dimagh, temporarily retains the forms (images) of sensory objects after their physical absence. This faculty is responsible for the continuation of perception even after sensory stimulation ceases. According to Jurjānī in Zakhīrah Khwārizm Shāhī, Khayāl enables the mind to recall and manipulate sensory images, contributing to visualization, creativity, and dream formation. It acts as the repository of perceptual impressions that can later be processed by higher faculties such as Mutasarrifah.[3]

3. Wahm (Faculty of Apprehension/Estimation)

The faculty of Wahm, situated in the Baṭn Ausat Dimāgh, perceives meanings and associations beyond the reach of the external senses. It interprets abstract or instinctive notions such as perceiving danger, recognizing affection, or sensing hostility which are not directly tied to sensory experience. Ibn Sīnā identified Wahm as the faculty responsible for understanding maʿānī ghayr mahsūsah (non-sensible meanings). Rāzī in Kitāb al-Ḥāwī also emphasized the role of Wahm in emotional and instinctive behavior, describing it as the origin of fear, courage, and social perception.[1,2,4]

4. Hāfizah (Faculty of Memory)

Hāfizah, located in the Baṭn Muʾakhkhar Dimāgh, is responsible for storing both sensory and intellectual forms for future recall. It preserves the data gathered by Hiss Mushtarik, the imaginative impressions from Khayāl, and the abstract meanings derived by Wahm. This faculty ensures continuity of thought, learning, and personal identity. Unani physicians observed that impairment of Hāfizah could result from an imbalance in the brain's temperament (Mizāj), particularly when it becomes excessively cold and moist a condition leading to forgetfulness and cognitive dullness.[5]

5. Mutasarrifah (Faculty of Modification/cognitive power)

The Mutasarrifah is considered the executive faculty of the mind. It synthesizes, compares, and judges between ideas derived from all other faculties. Located within the Baṭn Muʾakhkhar and Baṭn Ausat Dimāgh of the brain, it enables reasoning (Tafakkur), decision-making, and voluntary control of actions. According to Ibn Sīnā, Mutasarrifah governs the Nafs-e-Nātiqa (power of speech), distinguishing humans from other beings by granting them the ability to think, plan, and exercise moral judgment. This faculty also directs motor functions by sending commands to the Aʿṣāb (nerves) that execute voluntary movement.[1]

Together, these internal faculties form an integrated system through which perception, emotion, cognition, and memory function harmoniously. Thus, Dimāgh thus serves as both the physiological and psychological nexus of the human body. Unani physicians viewed any disturbance in these faculties as a reflection of Sū'-e-Mizāj Dimāgh (deranged brain temperament), leading to

conditions such as insomnia, depression, epilepsy, or loss of intellect and other brain related dysfunctions.[5,6]

This conceptualization demonstrates the remarkable sophisticated understanding of Unani neurophysiology and psychology, centuries before modern neuroscience emerged. It presents an integrated view that links mental, emotional, and spiritual dimensions within a single holistic framework.

Modern perspective

Brain is the supreme organ of the nervous system and represents the pinnacle of biological complexity. It arranges virtually every aspect of human existence from basic physiological regulation to the highest forms of thought, consciousness, creativity, and social behaviour. Contained within the cranial cavity and protected by the meninges and cerebrospinal fluid (CSF), the brain receives, processes, stores, and generates information that enables survival, adaptation, learning, and intellectual development.[11]

Structurally, the adult brain weighs approximately 1.3–1.5 kilograms and contains an estimated 86 billion neurons, supported by an even larger number of glial cells that maintain homeostasis, provide metabolic support, and modulate synaptic activity. Neural communication occurs through rapid electrical impulses and chemical neurotransmitters, allowing the formation of complex neural circuits that underlie behaviour, memory, emotion, and perception. Developmentally, the brain originates from the embryonic neural tube and differentiates into three primary regions: the forebrain (prosencephalon), midbrain (mesencephalon), and hindbrain (rhombencephalon). These regions give rise to the essential divisions of the adult brain, including the cerebrum, diencephalon, brainstem, and cerebellum.[12,13]

Among these structures, the cerebrum is the largest and most evolutionarily sophisticated component. It is responsible for higher cognitive functions, voluntary motor control, sensory perception, memory consolidation, decision-making, emotional regulation, and language. The outermost layer of the cerebrum, the cerebral cortex, is a highly folded sheet of grey matter approximately 2–4 mm thick. Despite its thinness, the cortex contains billions of neurons organized into six histological layers (I–VI), each with distinct patterns of connectivity. The convolutions of the cortex gyri and sulci greatly increase surface area, allowing a higher density of neural circuits that support advanced cognitive abilities.[13,14,15]

The cerebral cortex is functionally and anatomically divided into four major lobes: frontal, parietal, temporal, and occipital. Each lobe contains specialized primary areas for processing basic sensory or motor information, as well as extensive association areas that integrate multisensory inputs and support complex mental activities such as reasoning, judgment, imagination, attention, and language.[16]

The frontal lobe, occupying the anterior portion of the cerebral cortex, is the most evolutionarily advanced region and plays a central role in shaping human personality, behaviour, and intelligence. Posteriorly, the primary motor cortex, located in the precentral gyrus, controls voluntary movements of the contralateral body through direct projections to the spinal cord. Adjacent regions the premotor cortex and supplementary motor area (SMA) coordinate movement planning, sequencing, and the execution of skilled motor actions.[16,17]

The anterior part of the frontal lobe is occupied by the prefrontal cortex (PFC), which is responsible for executive functions such as abstract reasoning, decision-making, working memory, emotional regulation, goal-directed behaviour, and social cognition. The PFC integrates information from sensory association cortices, limbic structures, the thalamus, and the basal ganglia, enabling the individual to evaluate experiences, plan actions, inhibit inappropriate responses, and maintain sustained attention. Its subdivisions dorsolateral, ventromedial, orbitofrontal, and anterior cingulate areas collectively contribute to adaptive behaviour, personality expression, moral judgment, and emotional balance. In the dominant hemisphere, Broca's area, located in the inferior frontal gyrus, mediates speech production and articulation, forming a critical component of the language network.[18,19]

The remaining lobes of the cerebral cortex further support the frontal lobe by processing sensory information. The parietal lobe integrates somatosensory inputs and contributes to spatial awareness, body schema, and attention. The temporal lobe houses auditory, memory, and language comprehension centres, while the occipital lobe is primarily devoted to visual processing. Collectively, these areas enable the brain to construct a coherent representation of the environment and guide appropriate behavioural responses.[19]

Deeper structures such as the thalamus, basal ganglia, limbic system, and brainstem nuclei further modulate cortical activity. The thalamus acts as the principal relay station for sensory information and plays a key role in attention and arousal. The basal ganglia help regulate movement and procedural learning, while the limbic system including the hippocampus, amygdala, and cingulate gyrus mediates emotion, motivation, and memory formation. The brainstem maintains vital autonomic functions such as respiration, cardiovascular regulation, sleep–wake cycles, and consciousness, while the cerebellum coordinates balance, posture, and fine motor control.[16,18,19]

COMPARATIVE ANALYSIS[1,2,3,4,5,14,16,18,19]

Unani Concept (Internal Sense)	Function (According to Unani Medicine)	Modern Correlation (Physiology)	Probable Brain Localization
Hiss Mushtarak	Integrates all sensory inputs to form a unified perception.	Sensory integration and perception	Thalamus, parietal association cortex.
Khayāl	Retains and recalls sensory images temporarily	Working memory and imagination	Prefrontal cortex
Wahm	Perceives abstract meanings and instincts	Emotional and instinctive perception	Limbic system, amygdala, hypothalamus
Hāfizah	Stores experiences and meanings permanently	Long-term memory and recall	Hippocampus, temporal lobe
Mutasarrifah	Analyses, synthesises, and judges ideas.	Cognitive and executive functions	Frontal lobe, cerebral cortex

MATERIAL AND METHODS

This is a literature-based descriptive and comparative study. Data were collected from classical Unani texts including Al-Qānūn fi'l-Ṭibb of Ibn Sīnā, Kitāb al-Ḥāwī of Rāzī, Kulliyāt-e-Nafisi, and Sharaḥ Asbāb wa ʻAlāmāt. Modern concepts were taken from recent editions of Guyton and Hall Textbook of Medical Physiology, Kandel's Principles of Neural Science, and Snell's Clinical Neuroanatomy.

CONCLUSION

The Unani concept of Ḥawās Khamsa Bātinah presents a remarkably advanced understanding of internal cognitive and perceptual functions. Classical scholars such as Ibn Sīnā and Rāzī described faculties like Hiss Mushtarik, Khayāl, Wahm, Hāfizah, and Mutasarrifah as essential mechanisms governing perception, imagination, judgment, memory, and executive control. Modern neuroscience, though based on different anatomical foundations, identifies parallel functions within the thalamus, limbic system, hippocampus, association cortices, and prefrontal regions.

The comparative analysis undertaken in this study reveals that Hiss Mushtarak corresponds to multisensory integration networks involving the thalamus and parietal association cortex; Khayāl parallels working memory and imaginative functions mediated by the prefrontal cortex; Wahm aligns with instinctive and affective processing within the limbic system; Hāfizah mirrors the memory-consolidation role of the hippocampal formation; and Mutasarrifah reflects executive and cognitive processes localized in the frontal lobes and higher cortical circuits. This alignment highlights how traditional and modern perspectives, though differing in methodology and terminology, converge on similar functional domains.

Thus, integrating Unani concepts with contemporary neuroscientific understanding not only enriches the interpretation of classical medical theory but also underscores the enduring relevance of Unani thought in explaining complex brain functions. This synthesis provides a broader, more holistic perspective on human cognition, bridging ancient wisdom with modern scientific evidence, and opens avenues for further interdisciplinary research in the fields of history of medicine, neuro philosophy, and integrative neuroscience.

Declaration by Authors

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