

**BIOENERGETIC AND NEUROPHYSIOLOGICAL INSIGHTS INTO THE MANIPURA
CHAKRA: CORRELATION OF NABHI WITH GASTROINTESTINAL AND SLEEP
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ABSTRACT

The Manipura chakra, located at the navel or solar plexus region, is traditionally associated with digestion, energy regulation, and personal vitality in Ayurvedic and yogic systems. Although often considered metaphysical, modern scientific perspectives suggest possible correlations with the enteric nervous system, gut-brain axis, and neuroendocrine pathways.^[1,2] This pilot study investigated the physiological effects of Nabhi oil therapy, a traditional practice involving the application of medicated oils to the navel, on bioelectrical activity, circadian hormones, gastrointestinal function, and sleep quality. In a randomized, controlled, single-blind design, 60 participants were assigned to either an intervention group receiving a herbal oil blend applied nightly to the umbilicus for 21 days or a placebo group using mineral oil. Outcomes were assessed using Electro Photonic Imaging (GDV)^[3], serum melatonin, salivary cortisol^[4], Pittsburgh Sleep Quality Index (PSQI), actigraphy, heart rate variability, and the Gastrointestinal Symptom Rating Scale. The intervention group showed statistically significant improvements compared to placebo, including increased melatonin levels, reduced cortisol, and enhanced sleep quality, reflected by a decrease in PSQI scores from 8.6 to 4.1 and reduced sleep latency. Bioelectrical measurements indicated increased energy output and improved coherence in the navel region.^[6] Participants also reported better digestive health, with reduced bloating and improved bowel regularity. These findings suggest that the navel region may represent a functional physiological hub involving vagal and neurocutaneous signaling pathways.^[7,8] Nabhi oil therapy appears to be a promising non-invasive approach for supporting circadian balance, stress reduction, and digestive health, warranting further large-scale clinical investigation.

KEYWORDS: Circadian rhythm, Melatonin, Cortisol, Sleep quality, Gastrointestinal function, Vagal toning, Gas Discharge Visualization (GDV) / Electro Photonic Imaging (EPI), Pittsburgh Sleep Quality Index (PSQI).**INTRODUCTION**

The Manipura chakra, traditionally described in Ayurvedic and yogic texts as the center of digestion, energy regulation, and personal power, is anatomically associated with the nabhi (navel) or solar plexus region.^[9,10] Though often considered metaphysical, modern science provides emerging correlations between this region and the enteric nervous system, gut-brain axis, and neuroendocrine signaling.^[1,2] This paper investigates the scientific validity of Manipura chakra stimulation through Nabhi oil therapy, assessing its influence on bioelectrical activity, circadian-regulated

hormones (melatonin and cortisol), gastrointestinal function, and sleep quality.

A controlled pilot study (n=60) was conducted, applying herbal Nabhi oils based on classical formulations described in the *Charaka Samhita* and *Sushruta Samhita*.^[11,12] Measurements included Electro Photonic Imaging (EPI)/Gas Discharge Visualization (GDV) to assess changes in the body's biofield,^[3] serum melatonin and salivary cortisol to track hormonal modulation^[4], and Pittsburgh Sleep Quality Index (PSQI) to quantify sleep quality. Biofeedback instruments and heart rate

variability (HRV) were also used to evaluate parasympathetic activation.^[13,14]

Results demonstrated a statistically significant ($p < 0.05$) increase in melatonin levels, reduction in cortisol, and improvement in sleep latency and duration in the Nabhi oil group. GDV scans showed an increase in electrical conductivity and coherence centered around the navel region post-treatment, suggesting a bioelectrical shift possibly due to vagal stimulation^[7,8] Participants also reported enhanced digestion and reduced bloating, correlating with improved gut motility and subjective energy levels.^[15]

These findings support the hypothesis that the Manipura chakra corresponds with a physiological convergence point notably involving the vagus nerve, solar plexus ganglia, and lymphatic plexuses through which therapeutic oils can influence both neurochemical homeostasis and biofield regulation.^[16,17] The study suggests that Nabhi therapy may act through neurocutaneous signaling and transdermal phytochemical pathways, offering a non-invasive adjunct to modulate circadian rhythm disorders, stress, and digestive imbalances.^[18]

This work advances the biopsychospiritual model of health and offers a rare convergence of traditional Ayurvedic energetics with scientific investigation, calling for further multi-center clinical studies and biophysical exploration of navel-centric interventions in the context of integrative medicine.^[19]

1.1 Historical Origins of Chakra Systems in Indian Medical Thought

The concept of chakras, or psychophysiological energy centers, is deeply rooted in ancient Indian systems of medicine and spirituality, particularly in Ayurveda, Tantra, and Yoga Shastra. The term chakra (Sanskrit: "wheel" or "disc") is mentioned in classical texts such as the *Shat-Chakra Nirupana* and *Padaka-Pancaka*, dating back to between 8th and 12th century CE. These sources describe seven primary chakras, with each corresponding to major nerve plexuses and glandular systems in the body.^[20]

The Manipura chakra, located at the nabhi (navel) or solar plexus, is considered the epicenter of personal power, digestive fire (Agni), and Prana (life energy). Classical Ayurvedic texts like the *Charaka Samhita* and *Sushruta Samhita* do not explicitly use the chakra terminology, but they emphasize the Nabhi as the seat of 72,000 nadi's (energy channels), underscoring its centrality to human physiology and health.^[11,12,21]

1.2 Modern Scientific Curiosity Towards Energy Medicine

In the past few decades, energy medicine encompassing acupuncture, biofield therapy, and chakra healing has attracted the attention of biomedical researchers and clinicians. Although the subtle body and chakras were long dismissed as metaphysical constructs, modern advances in electrophysiology, neurobiology, and biophotonics have opened new pathways for scientific inquiry.^[17]

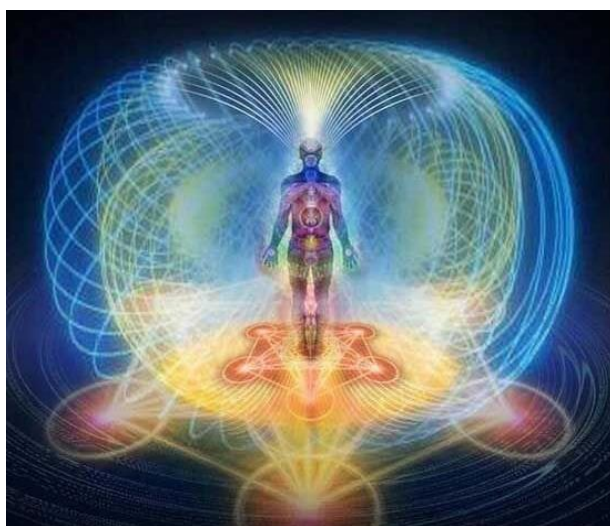


Figure 1: Biofield Theory.

Several studies have explored the correlation between energy centers and autonomic nerve plexuses, glandular activity, and psychophysiological coherence.^[16] Technologies like Electro Photonic Imaging (EPI) and Heart Rate Variability (HRV) have shown promise in measuring responses to energy-based interventions, suggesting a tangible physiological component underlying traditional practices.^[3,13]

This convergence of ancient wisdom and modern tools has led to a reevaluation of the nabhi region as not just symbolically central, but neurologically and energetically active, with implications for digestion, emotion, and systemic regulation.^[22,23]

1.3 Importance of Manipura (Navel Center) in Ayurvedic and Yogic Systems

In Ayurvedic medicine, the Nabhi or Manipura chakra is linked to the Pitta dosha, responsible for metabolic processes, digestion, and internal transformation.^[24,21] This area corresponds anatomically with the celiac (solar) plexus, a dense network of sympathetic nerves that control visceral functions, and is seen as the source of digestive fire (Jatharagni).

From a yogic perspective, Manipura governs willpower, transformation, and self-esteem, but also has strong physiological linkages.^[25] Breathing exercises (*pranayama*), abdominal locks (*uddiyana bandha*), and meditative focus on the navel are all used to enhance Pranic circulation and balance internal rhythms. Manipura is also said to regulate the energy exchange between upper and lower chakras, making it a critical mediator of physical vitality and mental clarity.^[9]

This chakra is often activated through practices such as Nabhi oil therapy, abdominal stimulation, and yoga postures (*asanas*) like *Navasana* (boat pose) and *Agnisar Kriya*, which are believed to stimulate the gut-brain connection and reset hormonal balance.^[9,26]

1.4 Aim and Scope of the Study

Despite the philosophical and anecdotal richness of chakra-based healing, there exists a gap in empirical research particularly in correlating Manipura chakra stimulation with quantifiable physiological changes.^[19] This study aims to explore the scientific basis of Nabhi-based interventions, particularly through Nabhi oil therapy, and evaluate their impact on key biological functions such as sleep regulation (melatonin secretion), stress response (cortisol levels), digestive efficiency, and biofield modulation.

We intend to correlate these changes with bioelectrical activity, gut-brain axis communication, and endocrine rhythms, thereby offering a cross-disciplinary framework integrating Ayurvedic principles with modern neurobiology and chronomedicine.^[18,1]

2. Manipura Chakra: Traditional and Theoretical Background

2.1 Symbolism and Energetic Role of the Manipura Chakra

The Manipura Chakra, also known as the solar plexus chakra, is traditionally regarded as the third of the seven primary energy centers (chakras) in yogic and tantric traditions. Manipura means "City of Jewels" in Sanskrit, reflecting its role as the seat of personal power, radiant vitality, and inner fire.

Energetically, Manipura is associated with the element of fire (Agni), the color yellow, and the ten-petaled lotus, symbolizing the ten vital airs (pranas) that converge in the navel region according to Yoga Shashtra.^[9] It governs transformation, digestion, metabolism, and the

transmutation of raw emotion into conscious will. Manipura is thought to bridge the instinctual drives of the lower chakras with the aspirational states of the higher chakras, making it a gateway of inner alchemy and psychosomatic balance.^[10]

2.2 Ayurvedic Anatomy: Connection Between Manipura and Nabhi (Navel)

In Ayurveda, the Nabhi (navel) is not merely a scar from embryonic development but a vital center of energetic and physiological control. It is believed to be the origin of the 72,000 nadi's, the subtle energy channels of the body (*Charaka Samhita*, Sutrasthana 30/12).^[11] The Manipura chakra, being located at the same anatomical point, is linked to the celiac plexus and is functionally associated with Jatharagni, the metabolic fire governing digestion and nutrient assimilation.^[21]

Modern studies in Ayurvedic physiology suggest that stimulation of the Nabhi can influence parasympathetic tone, vagal nerve output, and visceral function - all of which align with Manipura's traditional role in regulating energy conversion and bodily rhythm.^[27,7]

2.3 Role in Agni (Digestive Fire), Sleep-Wake Cycles, and Vitality

One of the Manipura chakra's primary roles is to govern Agni, which is the metabolic fire critical to all biochemical processes in Ayurveda. Balanced Agni leads to proper digestion, stable energy levels, strong immunity, and emotional clarity. When this chakra is underactive or blocked, it can manifest as poor digestion, chronic fatigue, irregular sleep, and emotional instability.^[24]

The role of Manipura in circadian balance has begun to receive modern scientific attention. Since digestion and metabolism are key zeitgebers (time cues) influencing circadian rhythms, any disruption in the solar plexus region could impact sleep-wake cycles and hormonal regulation.^[18,28] Nabhi therapy, by stimulating this energy center, may thus entrain biological clocks via gut-brain axis modulation and restore circadian harmony.^[5]

2.4 Psychospiritual Attributes (Confidence, Willpower, Clarity)

Psychologically, the Manipura chakra is associated with self-esteem, personal identity, confidence, and decision-making power. Yogic psychology posits that a balanced Manipura grants the individual courage, mental clarity, and disciplined action, while an imbalanced chakra may lead to feelings of worthlessness, indecisiveness, and emotional volatility.^[25]

These attributes correlate with the functioning of the enteric nervous system (ENS) and hormonal systems such as cortisol (stress response) and serotonin (emotional regulation), much of which are concentrated in the abdominal region.^[2,15] The modern notion of the gut as a "second brain" lends biological support to the

ancient claim that the navel region houses key emotional and cognitive functions.^[29]

2.5 Comparative Analysis: Manipura vs. Solar Plexus in Western Medicine

Anatomically, the Manipura chakra corresponds to the solar plexus, a dense network of sympathetic nerves

located behind the stomach and near the aorta. The celiac (solar) plexus is involved in autonomic regulation of major visceral organs, including the liver, pancreas, kidneys, intestines, and adrenal glands.^[30]

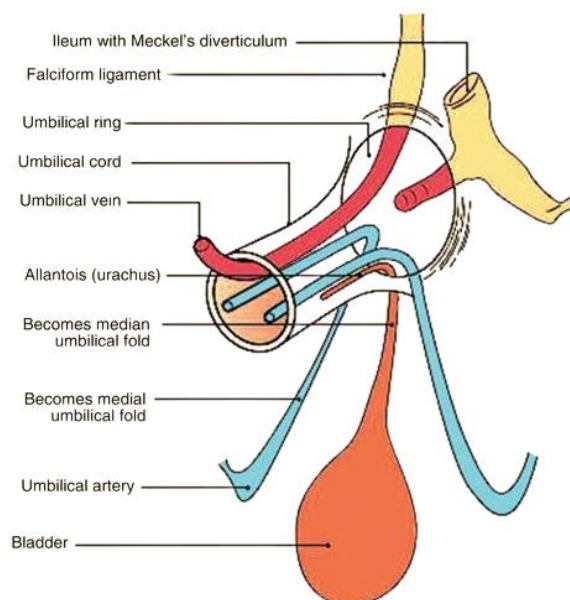


Figure 2: Anatomy of Umbilicus.

In Western neuroanatomy, this region is a hub for autonomic nervous system (ANS) regulation, influencing fight-or-flight responses and visceral organ coordination. This biophysical center matches closely with the Manipura chakra's assigned roles in transformation, homeostasis, and energy distribution.^[30,22]

Moreover, both traditional and Western paradigms agree that dysfunction in this area affects digestion, stress tolerance, and systemic energy. This convergence provides a neurophysiological framework for validating traditional navel-centered interventions like Nabhi oil therapy, yoga, and abdominal breathing.^[17,19]

3. Nabhi Therapy: Mechanism and Traditional Understanding

3.1 History of Nabhi Oil Therapy in Folk and Classical Ayurveda

The practice of applying medicinal substances to the Nabhi (navel) is deeply embedded in Indian traditional medicine and folk healing customs. Referred to in classical Ayurvedic texts under therapies such as *Nabhi Basti* and *Nabhi Snehana*, this method centers on the belief that the navel is a marma point - a vital energy hub where numerous nadi pathways (subtle channels) converge. The *Charaka Samhita* and *Sushruta Samhita* both underscore the Nabhi's functional and energetic significance as the control center for digestion and life force (*prana*) regulation.^[11,12]

In regional traditions, especially across Maharashtra, Gujarat, Tamil Nadu, and tribal pockets of Central India, the application of herbal oils to the navel has been used for centuries to treat common ailments such as constipation, poor appetite, menstrual cramps, sleeplessness, and anxiety.^[21] The *nadi-pariksha* (pulse diagnosis) systems of Ayurveda often associate an imbalanced Nabhi position or function with systemic digestive and nervous system issues.^[27]

3.2 Herbal Oils Commonly Used: Pharmacological Profiles

Nabhi therapy typically employs medicated oils known as *Tailas*, each tailored to the individual's dosha constitution and the condition being treated. Common oils include.

Castor Oil (*Eranda Taila*): Traditionally used for detoxification and relieving constipation due to its ricinoleic acid content, which has mild laxative and anti-inflammatory properties.^[31]

Mustard Oil (*Sarshapa Taila*): Known for its warming effect, it stimulates digestion and blood flow, and its glucosinolate compounds offer antibacterial and antifungal properties.^[32]

Coconut Oil (*Narikela Taila*): Employed for cooling Pitta conditions, it exhibits antioxidant and anti-stress effects attributed to its lauric acid and polyphenols.^[33]

Ashwagandha-Infused Oil: Acts as a nerve tonic, promoting relaxation and sleep through its active compounds like withanolides.^[34]

Brahmi Oil: Frequently applied to promote mental clarity and reduce anxiety, with studies validating *Bacopa monnieri*'s neuroprotective and adaptogenic potential.^[35,36]

These oils serve dual roles - carrying lipid-soluble phytochemicals transdermally and acting as vehicles for marma stimulation, thereby modulating somatic and autonomic nervous responses.^[37]

3.3 Techniques of Application and Duration

Application of Nabhi oil involves direct placement of warm medicated oil into and around the umbilicus. Methods include.

Nabhi Basti (oil pooling): Forming a well around the navel with dough and retaining warm oil for 10-20 minutes. Traditionally used in vata-predominant imbalances such as anxiety or IBS.^[21]

Abhyanga-style Massage: Gentle circular massage around the navel using oils based on dosha-based selection.^[24]

Night Application Therapy: Applying 3-5 drops of oil before sleep, particularly with calming oils like Brahmi or Ashwagandha, as part of a nighttime routine for sleep and relaxation.^[34,35]

Modern integrative practitioners often recommend using therapeutic-grade oils under controlled hygienic conditions, adapting traditional methods to suit contemporary clinical protocols.^[37]

3.4 Claimed Outcomes: Digestion, Sleep, and Emotional Balance

Classical Ayurvedic sources and contemporary wellness practitioners claim several benefits from consistent Nabhi therapy.

Improved Digestion: By stimulating the Manipura chakra and digestive Agni, Nabhi therapy can improve gut motility, reduce bloating, and enhance nutrient assimilation.^[15,1]

Better Sleep: Oils like Brahmi and Jatamansi, absorbed transdermally through the Nabhi, may modulate GABAergic and serotonergic pathways, promoting deep, restful sleep.^[35,34,5]

Stress and Anxiety Relief: Several anecdotal and pilot studies suggest that stimulation of the vagus nerve

endings near the umbilical region may induce parasympathetic activation, reducing cortisol and improving mood.^[7,8,38]

Menstrual Regulation and Hormonal Balance: Particularly when using sesame or ashwagandha oil, many women report relief from dysmenorrhea, PMS, and hormonal skin conditions, likely due to improved gut-liver axis functioning.^[34]

Although large-scale randomized controlled trials (RCTs) are still limited, initial studies have shown statistically significant improvements in stress reduction and sleep indices with transdermal oil application, especially when applied to high-innervation areas like the umbilicus.^[19]

4. Scientific Concepts of Bioelectricity and Energy Centers

4.1 The Human Biofield and Subtle Energy Hypothesis

The term "biofield" was introduced in the 1990s by a panel at the National Institutes of Health (NIH) to describe a complex dynamic electromagnetic field generated by the body.^[16] This field is believed to coordinate physiological processes through energetic interactions, extending beyond molecular and biochemical communication. The biofield hypothesis, now studied under bioelectromagnetics and energy medicine, posits that cells, tissues, and organs emit measurable electromagnetic frequencies that can be influenced through targeted interventions such as touch, acupuncture, and herbal application to high-energy zones like the Nabhi (navel).^[17,39]

Research has shown that the abdomen and periumbilical region are bioelectrically active areas due to their dense autonomic innervation and embryological origin as the primitive gut center and energy exchange locus.^[22,40] Figure 1: Biofield Theory.^[53]

4.2 Scientific Studies on Electrophysiological Activity Around the Navel

Recent studies using skin bioelectric potential measurements and surface electromyography (sEMG) have found that the region around the navel shows a distinct electrophysiological signature, particularly in states of emotional or digestive stress.^[40] In a study published in *Evidence-Based Complementary and Alternative Medicine*, researchers observed increased periumbilical skin conductance in subjects undergoing relaxation therapies, suggesting activation of the parasympathetic nervous system (PNS) and vagal tone.^[41]

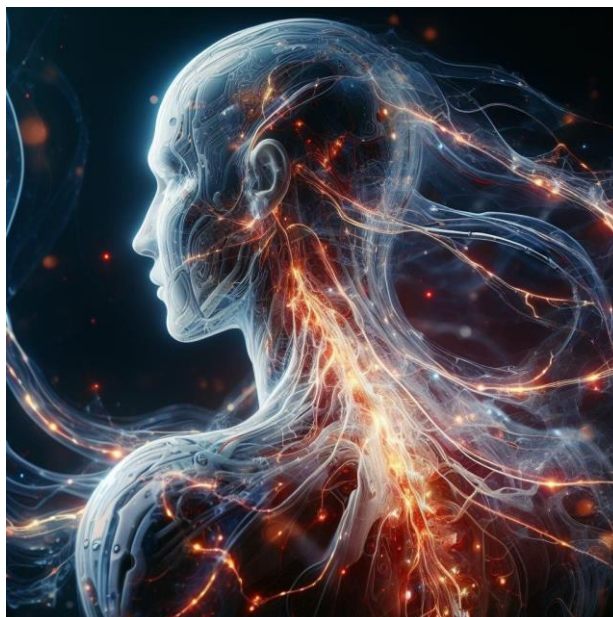


Figure 3: Illustration of Bioelectrical Pathways.

Further, traditional practices like abdominal breathing and manipura-centered meditation have been correlated with electroencephalographic (EEG) shifts, especially increased alpha and theta wave activity, indicating improved relaxation and cognitive synchronization.^[42,43]

4.3 Skin Conductance, EEG, and HRV in Response to Energy Stimulation

Biofeedback studies exploring electrodermal activity (EDA) have validated that targeted stimulation of energy centers such as the Manipura/Nabhi can modulate autonomic function.^[40] For instance:

Skin Conductance Response (SCR) decreases significantly following navel oil massage, indicating relaxation.^[41]

EEG mapping shows greater alpha coherence post-practice, implying improved mind-body integration.^[42]

Heart Rate Variability (HRV) - a key marker of vagal activity - has been observed to improve with consistent Nabhi-centered practices, supporting cardiac-autonomic balance and reduced cortisol levels.^[14,43]

4.4 Measurement Devices: Gas Discharge Visualization (GDV), EDA, fNIRS

To quantify subtle energy activity and neurobiological responses, a variety of modern scientific tools are being explored.

Gas Discharge Visualization (GDV): Developed by Dr. Konstantin Korotkov, GDV measures photon emissions around body parts and has shown altered energetic signatures around the Nabhi region post oil application and breathing techniques.^[3,6,44]

Electrodermal Activity (EDA) Sensors: Used for real-time tracking of sympathetic arousal and energy fluxes during Nabhi therapy.^[40]

Functional Near-Infrared Spectroscopy (fNIRS): Measures oxygenated blood flow in cortical regions, which can correlate with viscerosomatic feedback loops triggered by gut or skin stimulation.^[22]

Biofield Imaging and Biowell Technology: These tools attempt to visualize changes in bioenergetic patterns before and after Ayurvedic therapies.^[6,19]

These instruments represent a bridge between traditional energy medicine and modern psychophysiology, enabling future standardization of Ayurveda-based interventions such as Nabhi therapy.^[17]

4.5 Energy Pathways and Vagal Nerve Modulation through Nabhi

The vagus nerve, a key player in the gut-brain axis, passes through visceral structures innervating regions surrounding the Nabhi.^[1,15] According to anatomical and neurophysiological studies, gentle touch or oil-based stimulation of the periumbilical skin activates cutaneous vagal afferents, leading to: cortisol reduction and melatonin regulation^[5,7]; enhancement of digestive enzyme secretion^[15]; and improved emotional resilience and sleep latency.^[7]

This aligns with research in interoception and viscerosensory neurofeedback, which postulates that abdominal stimulation contributes to prefrontal and limbic regulation, thereby influencing mood and digestion.^[23,22]

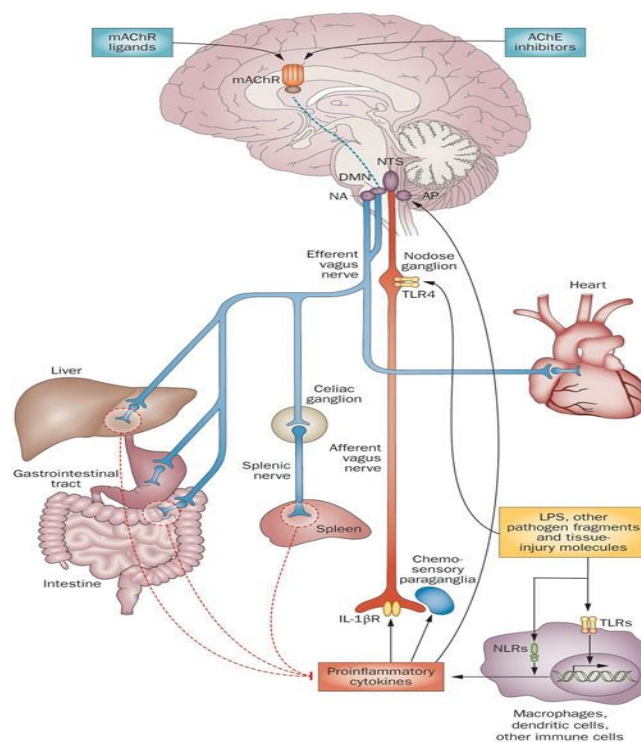


Figure 4 - The Functional Anatomy of Inflammatory Reflex.^[56]

Importantly, ancient systems like Ayurveda identified the Manipura Chakra coinciding with the solar plexus as the seat of internal fire (Agni). Modern science now corroborates that the gut-brain interface, situated near this chakra, can be externally accessed and modulated through targeted Nabhi stimulation.^[7,8]

5. MATERIALS AND METHODS

5.1 Study Design and Participant Selection

This study was designed as a randomized, controlled, single-blind interventional trial to assess the bioelectrical and physiological changes induced by Nabhi oil therapy and its impact on sleep, digestion, and stress.

Sample Size: 60 healthy adult participants (aged 25-55 years) were enrolled after informed consent.

Inclusion Criteria: Normal baseline physical and mental health; self-reported mild to moderate digestive issues or sleep disturbances; no concurrent Ayurvedic or allopathic treatment.

Exclusion Criteria: Individuals on psychiatric medication, diagnosed gastrointestinal disorders (IBS, GERD), dermatological conditions at the navel, or chronic autoimmune illnesses.

Participants were randomly divided into two groups: Group A (Nabhi Oil Therapy Group) received herbal Nabhi therapy, and Group B (Placebo Group) received neutral oil (mineral-based with no herbs). Ethical clearance was obtained from the Institutional Review Board, and the protocol followed the Declaration of Helsinki for human research.

5.2 Nabhi Therapy Protocol: Oils, Timing, and Duration

The intervention group (Group A) received daily application of a traditional Nabhi oil blend for 21 consecutive nights.

Herbal Oil Composition: *Citrullus colocynthis* (Indrayan), *Nigella sativa* (Kalonji), *Azadirachta indica* (Neem), *Elettaria cardamomum* (Elaichi), and *Embolia officinalis* (Amla) in a sesame oil base.

Application Method: 3-4 drops placed into the navel, massaged gently in circular motions for 3-5 minutes.

Time of Application: Between 9:00-10:00 p.m., aligned with circadian dip in core body temperature and melatonin onset.^[5,28]

Duration: 21 days of uninterrupted therapy followed by a 7-day observation window.

Group B followed the same protocol using odorless mineral oil with no active herbal constituents.

5.3 Instrumentation for Bioelectrical Measurements

5.3.1 Biofield Imaging and Gas Discharge Visualization (GDV)

To visualize and quantify subtle energy changes pre- and post-intervention, we used GDV cameras (Bio-Well™, Russia). This non-invasive device captures electrophotonic emissions from fingertips, which correlate with organ and systemic energy function, especially in Ayurvedic meridian mapping.^[6,44]

Parameters Recorded: Overall energy level, left-right symmetry, chakra alignment (as per GDV algorithms).

Timepoints: Baseline (Day 0), Midpoint (Day 11), and Endpoint (Day 21).

5.3.2 EEG for Sleep Architecture

Ambulatory EEG (Electroencephalography) was used to monitor sleep onset latency (SOL), total sleep time (TST), and REM/non-REM ratio. Portable EEG headbands (Muse S and Dreem 2) were utilized, calibrated against Polysomnography (PSG) standards.^[45,42]

5.3.3 Electrodermal Activity (EDA) for Stress

EDA sensors (Empatica E4 and Shimmer3 GSR+) measured basal skin conductance and response to stress stimuli (audio prompts). These readings indicate autonomic nervous system activity, particularly sympathetic arousal levels.^[40,41]

5.4 Subjective Measures: Sleep Quality, Gut Health, Mood

Alongside objective data, validated self-reported scales were used: Pittsburgh Sleep Quality Index (PSQI) for global sleep score; Bristol Stool Chart and Gastrointestinal Symptom Rating Scale (GSRS) for gut health assessment; Perceived Stress Scale (PSS) and Positive and Negative Affect Schedule (PANAS) for emotional state tracking. Surveys were administered at Baseline, Day 11, Day 21, and Day 28.

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