

THERAPEUTIC ROLE OF METALS IN AYURVEDA, UNANI, ALLOPATHY, AND HOMOEOPATHY: A COMPARATIVE REVIEW

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ABSTRACT

This review explores the historical and contemporary therapeutic applications of metals in Ayurveda, Unani, Allopathic, and Homoeopathic systems of medicine. It highlights their traditional roles, processing techniques, and pharmacological effects, emphasizing their significance in natural healing practices. In Ayurveda, metals such as gold, silver, copper, iron, and zinc are integral to herbo-mineral preparations, with processes like purification and calcination detoxifying these heavy metals to render them medicinally safe. Similarly, the Unani system employs Kushta, or calxes, derived from processed metals, used for conditions such as anemia, diabetes, and arthritis, adhering to safety standards aligned with WHO guidelines. In modern Allopathic medicine, metals like gold, silver, and iron serve in targeted therapies for rheumatoid arthritis, wound infections, and anemia, respectively. Homoeopathy utilizes potentiated metal remedies to exert deep, long-lasting effects on the vital force, with extensive clinical and nanoparticle research supporting their efficacy. The review underscores the importance of proper processing and safety evaluations across all systems to harness metals' therapeutic potential while minimizing toxicity. Overall, metals continue to play a vital role in integrative medicine, bridging traditional practices and modern scientific understanding.

KEYWORDS: Metals, Ayurveda, Unani, Homoeopathy, Allopathy, Metallic remedies, Rasashastra, Kushta, Potentisation, Mineral kingdom, Integrative medicine.

AIM

To review and analyze the therapeutic role of metals in Ayurveda, Unani, Allopathic, and Homoeopathic systems of medicine and to highlight their safety, processing methods, and clinical significance.

OBJECTIVES

1. To study the historical use of metals in traditional systems of medicine.
2. To describe processing techniques used in Ayurveda and Unani for detoxification of metals.
3. To analyze therapeutic applications of metals in modern allopathic medicine.
4. To evaluate the role of metallic remedies in homoeopathic therapeutics.
5. To compare safety considerations across different medical systems.
6. To highlight the importance of metals in integrative and holistic medicine

MATERIALS AND METHODS

This study is a **narrative review** based on classical texts, modern literature, and published research articles. Data were collected from:

- Classical Ayurvedic texts (Charaka Samhita, Rasashastra references)
- Unani classical literature and pharmacopoeia
- Homoeopathic pharmacy and materia medica textbooks
- Published journal articles and review papers
- WHO guidelines on heavy metals in traditional medicine
- Modern pharmacological literature on metallodrugs

Information regarding therapeutic indications, pharmacological actions, processing techniques, toxicity, and safety was extracted and compiled. Comparative analysis was performed to evaluate similarities and differences in usage across systems of medicine.

REVIEW OF LITERATURE**METALS IN AYURVEDA****A REVIEW OF THEIR THERAPEUTIC UTILITY****INTRODUCTION**

The Ayurvedic system of medicine has great antiquity, dating back to about 5000 years B.C. Its Materia Medica contain resources in the form of drugs derived from plant, animal, metal and mineral sources,^[1] the use of which have been advocated in various different pathological manifestations. These drugs have also been converted in to poly-herbal, herbo-mineral and metallic compound formulations by the seers, who have documented their clinical experiences and passed on the knowledge to further generations.

During the medieval period, with the advent of Rasashastra, use of certain heavy metals and minerals in Ayurvedic therapeutics increased. Rasashastra, an integral part of Ayurveda, deals with the drugs of mineral origin, and details their varieties, characteristics, processing techniques, properties, therapeutic uses, possibilities of developing adverse effects and their management etc. in a comprehensive way. Although the roots of this science (Rasa Shastra) exist in the ancient texts of Indian civilization, its development as an independent system of therapy started around the 8th

century A.D.. Ayurvedic classics written before that time, like Charaka Samhita and Sushruta Samhita etc. contain descriptions of metals and minerals, their processing techniques and their utilization in therapeutics etc.

In due course of time, herbo mineral and metallic preparations came to occupy a significant seat in Ayurvedic pharmacopoeia and have routinely been used in practice in different parts of India for many centuries. Such preparations are held to be safe, efficacious even in minute doses, and, when manufactured and used following specified classical guidelines, not to lead to any significant untoward effects.^[2] The past decade, however, has witnessed concerns by the western scientific community, regarding the safety of Ayurvedic Herbal, Herbo-mineral and metallic preparations, which is a major concern for the age-old Ayurvedic heritage.^[3]

This paper attempts to screen Ayurvedic classics for references emphasizing the utilization of metals for medicinal and other purposes. Charaka Samhita was scrutinized and found to contain referred frequent references to metals used for different purposes including medicinal and non medicinal ones. Seer Charaka advocated converting the metals in to fine powders before their utilization and observing great caution during the period of administration in different disease manifestations.^[20]

Heavy metals

SWARNA (GOLD)

Pharmacological actions

Aphrodisiac, cardiac stimulant, immuno-modulator, increases potentiality, complexion, longevity, intellect, memory and attentiveness, in management of poisoning. It alleviates disorders caused by all the three vitiated Doshas.

Therapeutic indications

Tuberculosis, schizophrenia, fever, grief, anemia, dyspnea, cough, worm infestation, anorexia, ophthalmic disorders and in poisoning.

Therapeutic dose 1/8th to 1/4th Ratti (15 to 30 mg)/day

Adverse effects/Toxicity

Weakness, imbalance of even death. impotency, leads to homeostasis .

Management of toxicity Powder of chebula fruit Terminalia should be given repeatedly along with sugar candy (Sita) for 3 days.^[19]

SILVER (RAJATA)

Aphrodisiac, anti-ageing, scraping, immunomodulator properties, increases potentiality and intellect. It eradicates diseases caused by all three vitiated Doshas.

Therapeutic dose 1/4th to 1 Ratti (30 to 125 mg)/day

Therapeutic indication

Diabetes, vitiligo, tuberculosis, anemia, dyspnea, cough, ophthalmic disorders, piles, thirst, emaciation. And in poisoning.

Adverse effects/Toxicity

Diabetes, vitiligo, tuberculosis, anemia, dyspnea, cough, ophthalmic disorders, piles, thirst, emaciation. and in poisoning.

Management of toxicity

Sugar and honey should be given repeatedly^[19]

COPPER (TAMRA)

Rejuvenator, wound healer, emaciator, purgative and immunomodulator. It alleviates disorders caused by Kapha and Pitta.

Therapeutic dose

1/8th to Ratti (15 60 mg)/day.

Therapeutic Indication

Fever, anemia, dyspnea, cough, worm infestation, emaciation, anorexia, dyspepsia, abdominal tumor, splenic disorder, liver disorder, fainting, spasmodic pain, peptic ulcer, ascitis, diabetes, bowel syndrome, piles, rhinorrhea, acidity, etc.

Adverse effects/Toxicity

hallucination, Vomiting, fainting, perspiration, skin disorders, spasmodic pain, hyperlipidemiron, delirium, anorexia, ihhuhithe given vepadanesisy impotency, leads to lack of complexion and even death.

Management of toxicity

Coriandrum Powder of sativum. (Dhanyaka) fruit or Sesbania (Munivrihi) Along with sugar candy [Sita].^[19]

IRON (LAUHA)

Aphrodisiac, anti-ageing, emaciating, immunomodulator properties, increases potentiality, complexion and appetite. It eradicates diseases caused by vitiated Kapha and Pitta.

Therapeutic Dose

1/4th to 2 Ratti (30 to 250 mg)/

Therapeutic Indication

Anemia, diabetes, tuberculosis, piles, skin disorders, worm infestation, cachexia, obesity, bowel syndrome, splenic disorders, hyperlipidemia, dyspepsia. Spasmodic pain, and also in poisoning.

Adverse effects / Toxicity

Angina, skin disorders, urolethiasis, spasmodic pain, burning sensation, weakness and even death.

Management of toxicity

Powder of Embelia ribes fruit should be given repeatedly with the Juice of Sesbaniagrandi flora leaves and patients should be exposed to sunlight. If worm infestation.^[19]

Zinc (Yasada)

Ophthalmic nourisher Immunomodulator, increases strength, potentiality, and It alleviates diseases. caused by vitiated Kapha and Pitta. intellect.

Therapeutic Dose

½ to 1 Ratti (60 to 125 mg)/day.

Therapeutic Indication

Diabetes, anemia, dyspnea, cough, emaciation, ulcer, depression, tremor, ophthalmic disorders etc.

Adverse effects/ Toxicity

Diabetes, Indigestion, vomiting, hallucination etc.

Management of toxicity

Powder of green Terminalia chebula (Vala Haritaki] should be given repeatedly along with sugar candy (Sita) for 3 days.^[19]

Use of Metals in Unani System of Medicine

In the Unani system, metals are integral therapeutic agents, processed through *Tasfiya* (purification) and *Tadbir* (incineration/calcination) to form *Kushta*—biocompatible calxes that balance humors and treat chronic ailments.

Effects of Processes on Minerals and Metals in Ayurveda/Unani. *Int J Res Ayurveda Pharm.*^[14]

Physicochemical Assessment of Kushta Nuqra. *World J Pharm Med Res.*^[15]

These processes detoxify metals like mercury, gold, silver, iron, and copper, rendering them absorbable and non-toxic for conditions such as diabetes, rheumatism, and anemia.

Heavy Metals Analysis in Unani Formulations. *Pharmacophore J.*^[16]

Classical texts like *Al-Qanoon fit-Tib* by Ibn Sina emphasize their aphrodisiac, tonic, and anti-inflammatory roles.

Al-Qanoon fit-Tib by Ibn Sina (Avicenna). Classical Unani text.^[18]

Key Kushta formulations include:**Kushta Zahab (Gold calx)**

Aphrodisiac; treats diabetes mellitus, cardiac weakness, paralysis, and sexual debility.

Effects of Processes on Minerals and Metals in Ayurveda/Unani. *Int J Res Ayurveda Pharm.*^[14] National Formulary of Unani Medicine, CCRUM Part I-V.

Kushta Nuqra (Silver calx)

Brain tonic; indicated for epilepsy, insanity, tremors, and chronic fevers.

Physicochemical Assessment of Kushta Nuqra. *World J Pharm Med. Res.*^[15] Standardisation of Kushta. *Unani J.*^[21]

Kushta Qalai (Iron calx)

Hematinic; used for anemia, jaundice, visceral weakness, and skin disorders.

Heavy Metals Analysis in Unani Formulations. *Pharmacophore J.*^[16]
Kitab al-Uquid by Zakariya Razi. Classical reference.^[18]

Kushta Tila (Copper calx)

Liver tonic; effective in phthisis, syphilis, scrofula, and helminthiasis.

Effects of Processes on Minerals and Metals in Ayurveda/Unani. *Int J Res Ayurveda Pharm.*^[14]

Unani Pharmacopoeia of India, CCRUM^[17]

Kushta Para (Mercury calx)

Alterative; manages syphilis, rheumatism, urinary disorders, and obesity.

Al-Qanoon fit-Tib by Ibn Sina (Avicenna). Classical Unani text.

Safety Study of Unani Kushta.^[18]

Safety profiles confirm permissible heavy metal levels post-processing, aligning with WHO standards. WHO Guidelines on Heavy Metals in Traditional Medicines.^[11]

Use of Metals in Allopathic System of Medicine

Gold Compounds

Gold-based drugs, such as auranofin and sodium aurothiomalate, treat rheumatoid arthritis by inhibiting inflammation and thioredoxin reductase. Recent studies explore gold(III) complexes for anticancer activity via ROS generation and enzyme modulation.

"Metals in Medicine" by Jaouen (2009): Covers gold, iron, copper mechanisms.^[10]

Silver Applications

Silver ions in creams like silver sulfadiazine combat infections in burns through membrane disruption and bacterial DNA binding. Nanoparticulate silver enhances antimicrobial efficacy in wound care.

Sahu et al. (2019). "Metal Complexes in Medicine: An Overview." Juniper Publishers.^[8]

Iron and Copper Therapies

Iron salts (e.g., ferrous sulfate) address anemia by replenishing hemoglobin stores; copper chelators like tetrathiomolybdate manage Wilson's disease excess.

Bai D. (2025). "From Traditional Mineral Medicine to Metallodrugs." PMC.^[9]

Barry M. (2011). "Therapeutic Potentials of Metals in Ancient India." PMC.^[7]

Tin and Mercury

Roles Organotin compounds show experimental antitumor potential but limited clinical use due to toxicity. Mercury derivatives like thiomersal were historical preservatives but phased out over neurotoxicity concerns.

Sahu et al. (2019). "Metal Complexes in Medicine: An Overview." Juniper Publishers.^[8]

METALS IN HOMEOPATHY: A REVIEW OF THEIR THERAPEUTIC UTILITY

Introduction

Homoeopathy is a scientific system of medicine based on the **law of similars**, where substances capable of producing symptoms in healthy individuals are used to treat similar symptoms in diseased individuals. Homoeopathic medicines are derived from natural sources including plant, animal, and mineral kingdoms.^[1]

Among these, metallic remedies from the mineral kingdom are known for their deep, long-lasting action on the human organism, particularly affecting the mind, nervous system, blood, glands, and bones.^[2]

Definition of Homoeopathic Drugs

“Homoeopathic medicines are medicinal substances obtained from natural sources and prepared through processes such as trituration, dilution and succussion to develop their dynamic therapeutic power”.^[1]

This process converts crude substances into dynamic, non-toxic, and therapeutically active medicines.

Sources of Homoeopathic Drugs

Homoeopathic drugs are derived from the following sources.^[1]

Source	Examples
Plant Kingdom	Belladonna, Nux vomica
Animal Kingdom	Apis, Lachesis
Mineral Kingdom	Sulphur, Calcarea
Metals	Aurum, Argentum, Ferrum
Nosodes	Tuberculinum
Sarcodes	Thyroidinum

Among these, **metals** form a significant group due to their **deep constitutional action**.

Organic and Inorganic Metals in Homoeopathy

Some metals may exist in organic combinations, especially in early pharmaceutical preparations, but classical homoeopathy primarily uses inorganic metallic sources.

Most homoeopathic metals belong to the inorganic category^[1]:

Inorganic Metals

- Aurum metallicum (Gold)
- Argentum metallicum (Silver)
- Ferrum metallicum (Iron)
- Mercurius (Mercury)
- Cuprum metallicum (Copper)
- Plumbum metallicum (Lead)

These require **trituration before potentisation** because they are insoluble.

Utility of Homoeopathic Potentisation

Potentisation is the core pharmaceutical process in homoeopathy.^[1]

Functions

1. Reduces toxicity of crude metals
2. Enhances medicinal power
3. Converts drug into dynamic form
4. Enables action on vital force
5. Produces deeper and long-lasting effects

According to Close, potentiation transforms matter into dynamic energy capable of influencing the vital force.^[2]

Metals must undergo trituration with lactose up to 3X before dilution.^[1]

This process helps in liberating medicinal power.

Allen's Keynotes

Allen describes metals as **deep-acting constitutional**.^[3]

Mercurius (Allen)

- Offensive discharges
- Profuse salivation
- Ulcerations
- Aggravation at night.^[3]

Kent's Lectures

Kent emphasizes **mental generals** of metallic remedies.^[4]

Mercurius (Kent)

- Instability
- Weak memory
- Tremors
- Glandular involvement.^[4]

Boericke's Materia Medica

Boericke provides clinical utility of metallic remedies.^[5]

Mercurius (Boericke)

- Profuse sweating without relief
- Ulcers with offensive odor
- Tremors and weakness^[5]

Close – Philosophy of Homeopathy

Close explains that drugs act on the **vital force in dynamic form** and metallic remedies show **deep constitutional action**.^[2]

JD Patil Research Studies

JD Patil and colleagues demonstrated that homeopathic metal preparations may contain **nanoparticles**, which could explain their biological activity even at high dilutions (Patil JD, et al. Nanoparticle studies in homeopathic metal preparations).^[6]

Detailed Study of Mercurius

Sphere of Action

- Glands
- Bones
- Nervous system
- Mucous membranes

Key Features

- Profuse salivation
- Offensive breath
- Ulcerations
- Night aggravation
- Sweating without relief

Clinical Indications

- Tonsillitis
- Ulcers
- Gingivitis
- Skin infections

General Characteristics

Mercurius patients show **instability, weakness, and sensitivity to temperature changes**^[4,5]

Panchalohamulu in Homoeopathy

Definition

Panchalohamulu refers to a traditional alloy of **five metals**, widely used in Indian metallurgy and medicine.

Composition

Typically includes:

1. Gold (Aurum)
2. Silver (Argentum)
3. Copper (Cuprum)
4. Iron (Ferrum)
5. Lead/Tin (Plumbum/Vangam)

1. GOLD – Aurum metallicum

Boericke^[5]

Profound depression with suicidal tendency

Bone pains, especially night aggravation
Hypertension and cardiac complaints
Syphilitic affections

Kent^[4]

Extreme self-condemnation, worthlessness
Suicidal impulses
Affections of heart and bones
Sense of failure in life

Allen^[3]

Melancholy, religious despair
Bone pains worse at night
Caries of bones

Close^[2]

Represents deep constitutional pathology
Acts profoundly on mental and emotional sphere

JD Patil^[6]

Potentised gold shows nanoparticle-mediated biological activity. May influence neuro-endocrine regulation.

CLINICAL: -Alcoholism, Angina, Ankylosing spondylosis, Anorexia, Anxiety, Arrhythmia, Arthritis, Bone pains, Chronic fatigue syndrome, Depression, Drug abuse, Endocarditis, Hypertension, Insomnia, Malignancy, Mastoiditis, Nightmares, Orchitis, Sinusitis, Suicidal states, Undescended testes, Uterine fibroids, Valvular heart disease. -Aur-m 200 to 10M is a pathological remedy for undescended testicles, providing testicle is not ectopic- Dr. Foubister.^[22]

2. SILVER – Argentum metallicum**Boericke**^[5]

Acts on larynx and joints
Hoarseness, especially in singers
Weakness of vocal cords

Kent^[4]

Weakness of voice and nervous system
Trembling and fatigue

Allen^[3]

Chronic laryngeal affections
Hoarseness from overuse of voice

Close^[2]

Acts on functional weakness

More local action than deep destructive pathology

JD Patil^[6]

Silver nanoparticles in potentised form may show antimicrobial and neurological modulation.

CLINICAL -Chronic gonorrhoea, -Metrorrhagia, Ovarian cyst, tumours. Laryngitis.^[22]

3. COPPER – Cuprum metallicum**Boericke**^[5]

Convulsions and spasms

Cramps beginning in fingers and toes

Cholera-like conditions

Kent^[4]

Violent spasmodic conditions

Suppressed eruptions leading to convulsions

Allen^[3]

Sudden spasms

Blue discoloration

Collapse states

Close^[2]

Acts intensely on neuromuscular system

JD Patil^[6]

Copper nanoparticles may influence neuromuscular transmission.

CLINICAL: -Angina pectoris, Asthma, Cholera, Chorea, Colic, Cramps, Encephalitis, Gastrointestinal disorders, Headache, Meningitis, Migraine, Nocturnal myoclonus, Seizure disorder, Tics, Twitches.

-In pure nervous asthma - Dr. Russell.

-For the vomitus of drinkers, Cupr shall be thought of - Dr. Berlyn.^[22]

4. ZINC – Zincum metallicum**Boericke**^[5]

Nervous exhaustion

Restless feet

Brain fatigue

Kent^[4]

Suppressed eruptions → brain symptoms

Fidgety feet, weakness of nerves

Allen^[3]

Tremors and restlessness

Nervous irritation

Close^[2]

Acts on nerve centres and exhaustion states

JD Patil^[6]

Zinc nanoparticles may support neurological recovery mechanisms

CLINICAL -Asthma, Chorea, Dementia, Depression, Encephalitis, Enuresis, Gastritis, Head injury, Incontinence, Meningitis, Myoclonus, Neuralgia, Parkinson's disease, Prostatic hypertrophy, Strabismus, Tics, Tremors. -Zinc is beneficial in diabetic neuritis though the patient is on soluble insulin and not on Protamine zinc insulin.^[22]

5. IRON – Ferrum metallicum**Boericke^[5]**

Anemia

Weakness with flushing

Pale yet easily reddened face

Kent^[4]

Alternating pallor and redness

Hypersensitivity

Allen^[3]

Weakness despite apparent strength

Anemic conditions

Close^[2]

Acts on circulation and oxygenation

JD Patil^[6]

Iron nanoparticles may affect hemoglobin synthesis and metabolism.

CLINICAL: -Anaemia, Arrhythmia, Arthritis, Bursitis, Chronic fatigue syndrome, Diarrhoea, Epistaxis, Gastritis, Haemorrhages, Migraine, Obesity, Sciatica.

- Ferr 30 for vomiting after tonsillectomy- Dr. Fobister.
- If Bell. fails in typical headache, think of Ferr. - Dr. Wilburk Band.
- Avoid Ferr. in tuberculosis, syphilis and in persons predisposed to haemorrhages and especially never repeat it.^[22]

6. TIN – Stannum metallicum**Boericke^[5]**

Extreme weakness

Chest complaints with expectoration

Empty feeling in chest

Kent^[4]

Weakness in chest while talking

Tubercular tendencies

Allen^[3]

Profound debility

Weakness while speaking

Close^[2]

Represents loss of vital energy

JD Patil^[6]

Tin-based nanoparticles may influence cellular energy Mechanisms therapeutic Utility.

CLINICAL: -Asthma, Bronchitis, Chronic fatigue syndrome, Pneumocystis, Pneumonia, Recurring fever, Respiratory infection, Tuberculosis, Uterine prolapse.

-Do not forget Stannum in frontal sinusitis where the pain gradually rises to peak and fall gradually- Dr. Woodbury.

Homoeopathic Perspective

Each metal, when potentised, acts on different systems:

- **Gold** → Mind, heart
- **Silver** → Nerves, larynx
- **Copper** → Muscles, spasms
- **Iron** → Blood, anemia
- **Lead** → Nerves, paralysis

Therapeutic Utility

Panchalohamulu represents a **combined action on multiple systems**, particularly:

- Nervous system
- Circulatory system
- Musculoskeletal system

Though not a classical single remedy, its components are widely used individually in homoeopathy.

DISCUSSION

Metals have played a significant therapeutic role in various systems of medicine from ancient times to modern clinical practice. In Ayurveda, metals such as gold, silver, copper, iron, and zinc are extensively used after undergoing purification and calcination procedures described in Rasashastra. These processes convert raw metals into bioavailable and less toxic forms, enabling their use in minute doses. Ayurvedic texts describe multiple therapeutic benefits, including immunomodulatory, rejuvenating, and tonic actions. However, concerns regarding heavy metal toxicity emphasize the need for strict adherence to classical preparation guidelines.

Similarly, the Unani system utilizes processed metallic preparations known as Kushta. These preparations are obtained through purification and incineration processes, which aim to detoxify metals and enhance therapeutic efficacy. Kushta

formulations such as Kushta Zahab, Kushta Nuqra, and Kushta Qalai are traditionally used in chronic diseases like anemia, diabetes, neurological disorders, and sexual debility. Modern analytical studies have demonstrated acceptable heavy metal levels in properly prepared Kushta formulations, supporting their safety when prepared according to classical methods.

In allopathic medicine, metals are used in targeted pharmacological therapies. Gold compounds are used in rheumatoid arthritis for their anti-inflammatory properties. Silver preparations are widely employed in wound management due to their antimicrobial effects. Iron supplements remain the cornerstone for the management of anemia, while copper-modulating drugs are used in metabolic disorders. Advances in nanotechnology have further expanded the application of metallic nanoparticles in medicine. Homoeopathy utilizes metals in potentised forms derived mainly from the mineral kingdom. Metallic remedies such as Aurum metallicum, Argentum metallicum, Ferrum metallicum, and Mercurius are known for their deep constitutional action. The process of trituration followed by potentisation reduces toxicity and enhances dynamic therapeutic action. Homoeopathic metallic remedies are believed to act on the vital force, influencing mental, emotional, and physical levels. Recent nanoparticle research suggests the presence of nano-sized particles in highly diluted homoeopathic preparations, providing possible scientific explanations for their biological activity.

Homoeopathic metallic remedies occupy an important place in constitutional and pathological prescribing due to their deep and sustained action on various organ systems. Metals such as Aurum metallicum, Argentum metallicum, Cuprum metallicum, Zincum metallicum, Ferrum metallicum, and Stannum metallicum exhibit characteristic mental, physical, and pathological indications described in classical homoeopathic literature. These remedies demonstrate marked affinity toward systems such as nervous, cardiovascular, respiratory, and musculoskeletal systems, making them useful in chronic constitutional and degenerative conditions.

Classical authors have highlighted their profound action on emotional states, neuromuscular disturbances, circulatory imbalances, and exhaustion syndromes, while contemporary interpretations suggest that potentised metals may exert biological effects through nanoparticle-mediated mechanisms influencing neuro-endocrine and cellular functions. The wide clinical applicability of these remedies in conditions such as depression, anemia, spasmodic disorders, respiratory diseases, and chronic fatigue underscores their therapeutic significance in homoeopathic practice.

Comparative analysis shows that all systems emphasize proper processing of metals to reduce toxicity. While Ayurveda and Unani rely on calcination techniques, homoeopathy uses potentisation, and allopathy employs controlled pharmacological dosing. Despite differences in philosophy, metals remain valuable therapeutic agents across systems.

CONCLUSION

Metals have maintained a significant therapeutic role across different systems of medicine, from traditional practices to modern clinical applications. Ayurveda and Unani emphasize purification and calcination methods to enhance safety and efficacy, while allopathic medicine utilizes metals in controlled pharmacological doses for targeted therapeutic action. Homoeopathy employs potentisation to minimize toxicity and enhance dynamic medicinal properties.

Homoeopathic metallic remedies such as Aurum metallicum, Argentum metallicum, Cuprum metallicum, Zincum metallicum, Ferrum metallicum, and Stannum metallicum demonstrate deep constitutional and pathological action with

wide clinical applicability. Emerging evidence on nanoparticle presence in potentised preparations provides a possible scientific basis for their biological activity. Despite differences in preparation and philosophy, all systems highlight the importance of proper processing to ensure safety, reinforcing that metals continue to be valuable therapeutic agents in holistic and integrative medical practice.

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