East African Scholars Journal of Medical Sciences
Abbreviated Key Title: East African Scholars J Med Sci
ISSN: 2617-4421 (Print) & ISSN: 2617-7188 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-9 | Issue-4 | Apr-2026 | DOI: https://doi.org/10.36349/easms.2026.v09i04.008

Review Article

Indigo- The Jeans Dye, Various Reflections & its Role in Homeopathy of AYUSH & Dentistry

Dr. Tridibesh Tripathy[1]*, Prof. Byomakesh Tripathy[2], Professor Shankar Das[3], Prof. D.R. Sahu, Former HOD[4], Ms. Anjali Tripathy[5], Dr. Saket Kumar Mishra[6]

[1]BHMS (Utkal University, Bhubaneswar), MD (BFUHS, Faridkot), MHA (TISS, Mumbai), Ph.D. in Health Systems Studies (TISS, Mumbai), Homoeopathic & Public Health Expert, Visiting Professor, Master of Public Health (Community Medicine) program, Department of Social Work, Lucknow University, Lucknow, UP, India
[2]Vice Chancellor, G M University, Sambalpur, Odisha, Former VC i/c, Indira Gandhi National Tribal University, Amarkantak, District Anuppur, Madhya Pradesh & Former VC of Utkal University of Culture, Bhubaneswar, Odisha
[3]School of Health Systems Studies, TISS, Mumbai. Former Pro VC, TISS, Mumbai, Former Officiating In-Charge of Gokhle Institute of Politics & Economics, Pune, Maharashtra & Former Director, IIHMR, Delhi
[4]Department of Sociology, Lucknow University, Lucknow, Ms. Sanskriti Tripathy, student of final semester, B.Tech in Biotechnology, Bennett University, Greater Noida, Uttar Pradesh
[5]Director- Programmes, Knowledge Management & Research, Team of India Sanitation Coalition HQ at New Delhi. Former Deputy Director of Fair Med India, Gurgaon, Former Senior Program Manager, Language Learning Foundation, Lucknow & Former employee of International agencies for development such as Catholic Relief Services & Water Aid
[6]BDS (BBDU, Lucknow), MPH (CM)- Lucknow University, Lucknow. Post Graduate Diploma in Hospital Management (NIHFW, Delhi), Practicing Dentist in Sanior Hospital, Janakipuram, Lucknow

Article History
Received: 28.02.2026
Accepted: 23.04.2026
Published: 25.04.2026

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: The article has three primary sections. The first section deals with the recent application of the Indigo dye. The second section deals with the reviews of the drug from multiple angles. The third section deals with the application of Indigo in dentistry & Homoeopathy. The article traces the history of Indigo not only in medicine but also in agriculture, horticulture, crops, plantation, economics, culture, arts, social science, rural economy, Ayurveda, Homoeopathy, dentistry & Microbiology. However, it touches upon all other subjects & deal in partial detail in the field of dentistry. Only Homoeopathy is the area that is touched upon in detail in the article. Indigo cuts across times across the globe as its use are multifaceted. The curiosity across era regarding Indigo just shows its importance especially in our country. Besides the synthetic use, it is good to know that the natural use of Indigo is on the rising trend. The natural use of Indigo has one of its tentacles in its Homoeopathic dimension. It is a broad spectrum drug in Homoeopathy that is used for various uses. The various systems of the human body that benefit from the use of Indigo in Homoeopathy are the Central Nervous System (CNS), Gastro Intestinal System (GIS), Excretory System, Musculoskeletal System & Cardio Vascular System (CVS).

Keywords: Indigo, Anti-oxidants, Homoeopathy, Dye, Dentistry, AYUSH.

INTRODUCTION

Indigo is commonly called as 'Tarai Blue'. In India, historically during the Indigo revolt of 1859-60, peasants across Bengal refused to sow the crop & went against the wish of British to grow the cash crop instead of the staple crops. During the freedom movement related to Gandhiji in India, it is again the Indigo crop that brought Bapu to Champaran in Bihar as peasants of Champaran again refused to grow Indigo against the staples [1].

Indigo is actually a legume & is good for the soil. The plant loves hot, steamy weather. Indigo is not blue inside the plant. Fresh leaves contain 'Indican' which transforms through fermentation into the insoluble blue pigment known as 'Indogotin'. The liquid shifts from greenish yellow to blue color before the pigment settles. Thereafter, it is filtered, pressed & dried into cakes. Fabric that is dipped into the vat slowly turns from green color to blue color as it oxidizes in the air.

The magic & mystery of Indigo is that weather, temperature & timing shape every outcome. The 'Tarai

***Corresponding Author:** Dr. Tridibesh Tripathy
BHMS (Utkal University, Bhubaneswar), MD (BFUHS, Faridkot), MHA (TISS, Mumbai), Ph.D. in Health Systems Studies (TISS, Mumbai), Homoeopathic & Public Health Expert, Visiting Professor, Master of Public Health (Community Medicine) program, Department of Social Work, Lucknow University, Lucknow, UP, India

Blue' pigment is now used in textiles, wood, stoneware & architectural surfaces. Indigo is a difficult color to be used as paint [1].

Literature Glance

There are various issues around Indigo. These are 'ecological' & 'aesthetical'. Around 2, 80,000 tonnes (British Unit of Measure where 1tonne equals 1000 Kilo Grams) of chemical dyes enter the ocean every year. Inexpensive synthetic indigo derived from petrochemicals is often mislabeled as organic. These are the major ecological issues [1].

Regarding aesthetic value in the natural variety, the natural fabric is dipped into giant blue drums by village women and afterwards, these fabrics are sewed & knitted. The Art of India (AOI) exhibition that was held in Delhi in January 2026 gave the sense that the ancient Indigo color is alive & with time & care, the green color can turn blue [1].

Indigofera Tinctoria often studied for its economic and medicinal value, is a leguminous shrub known as "true indigo," acting as a key source of natural blue dye and a nitrogen-fixing soil enhancer. Research highlights its rich phyto-chemical composition including flavonoids, alkaloids, and tannins which provides antimicrobial, antioxidant, hepato-protective, and anti-inflammatory properties [1].

The key aspects of *Indigofera Tinctoria* research includes medicinal uses where traditionally it is used in Ayurveda and Siddha (A & S in the Acronym AYUSH) for treating bronchitis, asthma, liver disorders, skin diseases, and epilepsy. During the natural dye production, it contains indigo dye in its leaves, which is extracted for use in textiles, experiencing a revival due to demand for sustainable products. Regarding agricultural value, it is a hardy, deep-rooted shrub that thrives in tropical regions, aiding in soil improvement. Phyto-chemical potential studies shows bioactive compounds in the plant's leaves through GC-MS (Gas Chromatography- Mass Spectrometry) analysis, including saponins, glycosides, and terpenoids. In pharmacological studies, research indicates its efficacy in treating epilepsy and its antioxidant activities [1].

Indigo and its isomer, indirubin are two *bis*-indole alkaloids "Qingdai" (Indigo Naturalis), which has been used in mainland China for the treatment of eczema & hematemesis, tumefaction, and other conditions. "Qingdai" is composed of several plant species containing a dark blue dye, including the leaves and or stems of *Baphicacanthus cusia* (Nees) Bremek, [2](Acanthaceae), Indigofera tinctoria L. (Fabaceae), Indigofera *suffruticosa* Mill. (Fabaceae), Isatis tinctoria L. (Brassicaceae), and Polygonum *tinctorium* Ait. (Polygonaceae). Indirubin has been reported to possess cyclin-dependent kinase (CDK) inhibitory potential, and broad-spectrum antitumor activity. Meisoindigo is an indirubin derivative, developed to increase the solubility in water and reduce the side effects of indirubin. This compound showed significant activity against cancer cells through an ability to inhibit cyclin-dependent kinases, induce cell differentiation, promote apoptosis, and arrest cells in the G0/G1 phase of the cell cycle, and it also inhibited tumor growth in HT-29 colon cancer xenografts (100 mg/kg, i.p.). Meisoindigo is undergoing a Phase III clinical trial in the People's Republic of China for the treatment of Chronic Myelogenous Leukemia (CML) [2].

Indigofera Tinctoria commonly known as true Indigo has a long and significant history. It is not only as a natural dye but also in traditional medicine, including dental care. Originating in tropical regions like India, this plant was widely used in Ayurveda, the Indian system of medicine, where it was valued for its anti-microbial, anti-inflammatory and healing properties. In early dental practices, powdered leaves and extracts of Indigofera Tinctoria were used as natural tooth-cleaning agents, helping to maintain oral hygiene and prevent infections.

Traditional healers applied its paste to treat gum inflammation, oral ulcers, and toothache, while its antibacterial action helped control harmful oral microorganisms responsible for plaque and dental diseases. Historical evidence from African and Egyptian cultures also suggests its use in chewing sticks and oral cleansing rituals. Modern scientific studies have supported many of these traditional uses, showing that the plant contains bioactive compounds like flavonoids and alkaloids that exhibit antibacterial and antioxidant properties, particularly against oral pathogens such as Streptococcus mutans. Although it is not widely used in modern dentistry today, Indigofera tinctoria continues to hold potential in the development of herbal dental products like toothpastes and mouthwashes, offering a natural and cost-effective alternative for oral health care [3-7].

A study in 2025 discussed the historical, ecological, agricultural, economic significance of Indigo. It further cites that the modern application extend to anticancer and anti-inflammatory properties. It also says that Indigo has immense potential as a sustainable crop & can address environmental & economic challenges [8].

Another study done in 2002 mentions that the qualitative analysis of the leaf extracts of Indigo showed the presence of flavonoids, alkaloids, glycosides & terpenoids [9]. Further, a 2009 study reveals the genetic superiority accessions in terms of leaf yield and indigo dye content when grown as a intercrop in coconut plantation [10]. Moving ahead, a 2025 study cites that experimental findings using ethanolic and methanolic extracts from indigo proves their efficacy on many

pathogenic bacteria like Staphylococcus Aureus and Escherichia Coli [11].

Another Ayurvedic study mentions that Indigo is an excellent source of phyto-compounds that help to heal various diseases & health complications in human beings.[12] Similarly a 2012 Homoeopathic study informs that the Homoeopathic formulations of Indigo have Central Nervous System (CNS) depressant property.[13] Another study done in August 2022 cites that the leaf powder of Indigo functions through its phyto-chemicals that eliminate oxygen, stimulate the microbiota & accelerate its transitional changes toward a suitable function that opens its pathway for the extracellular electron transfer using carbohydrates as a substrate [14].

Homoeopathic Angle

Homoeopathy has a medicine from 'Indigofera Tinctoria' where the extract of this plant in water is subjected to fermentation and the liquid poured into shallow vats and repeatedly stirred. Indigo deposits are separated from liquid, collected and dried. The drug was proved by Martin & Schules and introduced by Hartlaub & Trinks in 1832. It was published in the journal 'Annales of Homoeopathy, KI, III, 329, 1832. It was described in the Encyclopaedia of pure Homoeopathic Materia Medica, Volume, 92 written and compiled by Dr. T.F. Allen. Dr. Allen produced the encyclopaedia in 10 volumes from 1874-1879 where 'Indigo' was one of the drugs from among the 716 drugs that he mentioned in the encyclopaedia [15, 16].

As the first paragraph under this drug, Dr. Boricke mentions in his book that 'Indigo' is useful in epilepsy with sadness, neurasthenia, hysteria. Besides, it is used for stricture of the oesophagus & blue coloration of various parts. He also mentions that pure powdered 'Indigo' placed on the wound cures snake & spider poison [17].

Dr. Allen in his key notes mentions 'Indigo' for use in delirium of alcoholism under the drug 'Agaricus'. 'Profuse epistaxis during every paroxysm of cough' is another use he mentions under the drug 'Drosera'. Under 'Aloes', he mentions 'itching & burning in anus, preventing sleep' [18].

Dr. Phatak mentions that the epilepsy attacks are preceded by a furious excitable disposition followed by melancholy, timidity, mildness, peculiar undulating sensation in the brain with obscuration of vision, sensation as if the brain were frozen. He also mentions of 'pain in the limbs that are aggravated after every meal. In sciatica, 'the pain moves from the middle of the thighs to the knees' [19].

Dr. Murphy mentions 'belching', 'epilepsy' & 'sciatica' as the three primary uses clinically [20].

CONCLUSION

As mentioned above, the drug 'Indigo' is being used since 194 years as it was introduced in Homoeopathy in 1832. Indigo is a part of our life. Here, the cost effectiveness property of Homoeopathy can be applied to use the drug "Indigo' for the masses.

At one end, it can be used for masses in natural clothing, art & culture and at the other end, Homoeopathy can be used as an Essential Medicine for the masses as it meets the criteria of Essential Medicine (EM).

The article aspires that the health policy integrates this drug of Homoeopathy of AYUSH for the benefit of masses.

Acknowledgement: The lead author thanks all the coauthors for their contribution in the non homoeopathic section.

Declaration: The lead author declares that the Homoeopathic modalities given here is only suggestive in nature.

Funding: There was no funding received for the article.

Conflict of Interest: There is no conflict of interest regarding the article.

REFERENCES

1. Ganesan S, Indigo's ancient blue rises from Himalaya's foot hills to Art of India (AOI) walls, TOI, 14th Jan 2026, Lucknow Edition, Page Number 8, sharmila.ganesan@timesofindia.com.
2. Science Direct, The Continuing Search for Anti Tumor Agents from higher plants, Indigo Fera Tinctoria, An Overview, Review Article, Renewable Dyes & Pigments, 2024, Subject Area-Biochemistry, Genetics & Molecular Biology, https://www.sciencedirect.com.
3. Kirtikar,K.R et al. Indian Medicinal Plants, 2009, Dehradun, International Book Distributors.
4. Council of Scientific and Industrial Research (CSIR), The Wealth of India, A Dictionary of Indian Raw Materials and Industrial Products, 2009, New Delhi.
5. Kokate,C.K,Text book of Pharmacognosy, Pune, Nirali Prakashan, 2010.
6. World Health Organization, WHO monographs on selected medicinal plants, 2007, Geneva.
7. GOI, NCBI, National Center for Biotechnology Information. Research articles on anti microbial activity of medicinal plants, 2020, Retrieved from https://www.ncbi.nlm.nih.gov
8. Rao P S et al. Indigofera Tinctoria: The Blue Gold of India's sustainable future, Discover Sustainability, v06, i1135, 2025.

9. Verma S M, Suresh K B, Phytochemical investigation of Indigofera Tinctoria Linn leaves, Ancient Science of Life, vxxi(4), April 2002, pg235-239.
10. Sarada S, Raghunath B R, Performance of Indian Indigo Accessions as Intercrop in Coconut Garden, Journal of Plantation Crops, 37 (3), 2009, pg 212-216.
11. Shivani, Anti Microbial activity & Phytochemical analysis of Indigofera Tinctoria, International Journal of Advanced Research, 13 (05), May 2025, pg 50-66.
12. Mishra D N et al. GC-MS analysis & phyto-chemical screening of Indigofera Tinctoria (Linn) leaf extract characterizing its medicinal use, International Journal of Ayurvedic Medicine, v11, i02, pg 289-299.
13. Sundaram E N et al. Indigofera Tinctoria: Preliminary experimental study evaluating its analgesic & behavioral activities in animals, Indian Journal of Research in Homoeopathy, v06, i 1&2, Jan- Jun 2012.
14. Lopes H D F S et al. Indigofera Tinctoria L. leaf powder promotes initiation of Indigo reduction by inducing of rapid transition of the microbial community, Frontiers in Microbiology, August 2022, 13.957809.
15. Varma P N, Vaid I, Encyclopaedia of Homoeopathic Pharmacopeia, B. Jain Publishers Private Limited, Delhi, Third Edition 2002, ISBN: 81-7021-1050-3, Book Code-BV-5502.
16. Nanda, L K, Fundamentals of Homoeopathic Materia Medica, First Edition-May 2007, Indian Books & Periodicals Publishers, New Delhi, ISBN:81-7467-209-5, Book Code Number- IB1614.
17. Boericke William, New Manual of Homoeopathic Materia Medica with Repertory, reprint edition, 2008, B. Jain publishers private limited, New Delhi, pages- 362-366, ISBN- 978-81-319-0184-7.
18. Allen, H C, Key notes and characteristics with comparisons of some of the leading remedies of the Homoeopathic Materia Medica with Bowel Nosodes, Reprint edition, B. Jain publishers Pvt. Ltd, 1993, ISBN-81-7021-187-5, book code, B-2001.
19. Phatak SR, Materia Medica of Homoeopathic Medicines, IBPP, Delhi, Reprint Edition 2011, ISBN-81-7467-008-4, Book Code- IB0682.
20. Murphy R, Lotus Materia Medica, 3rd edition, B. Jain publishers (P) Ltd, 2017, ISBN-978-81-319-0859-4.

Cite This Article: Tridibesh Tripathy, Byomakesh Tripathy, Shankar Das, D.R. Sahu, Anjali Tripathy, Saket Kumar Mishra (2026). Indigo- The Jeans Dye, Various Reflections & its Role in Homeopathy of AYUSH & Dentistry. *East African Scholars J Med Sci, 9*(4), 213-216.