# Dr. Swapan Paul

**Book Publication:** "Introduction to Homoeopathic Materia Medica".

| Sr. No. | Name of the Articles | Name of the Journals | Issue details | Month & Year |
|---|---|---|---|---|
| 1 | **Reshape from Obesity** (Pg. No. 56 – 59) | **Homoeopathy for All** (ISSN 0973-9823), New Delhi | Vol. 17 No. 10 (190) | October 2015 |
| 2 | **Menopause – A Milestone in Woman's Life** (Pg. No. 25 – 32) | **Homoeopathy for All** (ISSN 0973-9823), New Delhi | Vol. 17 No. 12 (192) | December 2015 |
| 3 | **Acute Infantile Colic and its Homoeopathic Approach** (Pg No 22 – 26) | **The Homoeopathic Heritage** (ISSN. 9070-6038), New Delhi | Vol. 41, No.12 | March 2016 |
| 4 | **Homoeopathy and Performance – Remedies for Men** (Pg. No. 12 – 17) | **The Homoeopathic Heritage** (ISSN: 9070-6038), New Delhi | Vol. 42, No.3 | June 2016 |
| 5 | **Bed-Wetting: No More Worry** (Pg. No. 55 – 57) | **Homoeopathy for All** (ISSN 0973-9823), New Delhi | Vol. 18 No. 8 (200) | August 2016 |
| 6 | **A case of Obstructive Jaundice cured by Arsenicum album** (Pg No 48 – 49) | **The Homoeopathic Heritage** (ISSN: 9070-6038), New Delhi | Vol. 42, No.5 | August 2016 |
| 7 | **An Overview on Psoriasis through Homoeopathic Lens** (Pg. No. 55 – 59) | **Homoeopathy for All** (ISSN 0973-9823), New Delhi | Vol. 18 No. 9 (201) | September 2016 |
| 8 | **Use of indian Drugs and Rare Drugs in Constipation** (Pg. No. 66 – 71) | **Homoeopathy for All** (ISSN 0973-9823), New Delhi | Vol. 18 No. 10 (202) | October 2016 |
| 9 | **Homoeopathic Perspectives on Allergic Rhinitis** (Pg. No. 56 – 60) | **Homoeopathy for All** (ISSN 0973-9823), New Delhi | Vol. 18 No. 11 (203) | November 2016 |
| 10 | **Dynamization: The Quantum Science of Homoeopathy** (Pg. No. 50 – 56) | **Advancements in Homoeopathic Research** (ISSN 2456-3668), | Vol. 1 No. 3 (37) | Nov 2016–Jan 2017 |

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|---|---|---|---|---|
| | | New Delhi | | |
| 11 | **Evidence based case study of Renal Calculus** (Pg. No. 33 – 36) | **The Homoeopathic Heritage** (ISSN: 9070-6038), New Delhi | Vol. 42, No.11 | February 2017 |
| 12 | **Homoeopathic Treatment of Nasal Polyp** (Pg. No. 68 – 73) | **Homoeopathy for All** (ISSN 0973-9823), New Delhi | Vol. 19 No. 2 (206) | February 2017 |
| 13 | **Homoeopathic Treatment of Dental Caries in Children** (Pg. No. 25 – 30) | **Homoeopathy for All** (ISSN 0973-9823), New Delhi | Vol. 19 No. 3 (207) | March 2017 |
| 14 | **Homoeopathic Management of Epistaxis** (Pg. No. 70 – 73) | **Homoeopathy for All** (ISSN 0973-9823), New Delhi | Vol. 19 No. 4 (208) | April 2017 |
| 15 | **Treatment and management of gouty Arthritis with a Case Study** (Pg. No. 37 – 41) | **The Homoeopathic Heritage** (ISSN: 9070-6038), New Delhi | Vol. 43, No.01 | April 2017 |

| SL.No. | Name of the Article | Name of the Journal | ISSN | Name of the Author(s) | Issue No | Volume No | Month | Page No |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| I | Angustura vera | Bulletin of the NIH | 0972-6276 | Dr. Gitasri Pal | No.2 | 8 | April 2005 | 45 |
| 2 | Ptelea trifoliata | Bulletin of the NIH | 0972-6276 | Dr. Gitasri Pal | No.4 | 8 | October 2005 | 134 |
| 3 | Berberis aquefolium | Bulletin of the NIH | 0972-6276 | Dr. Gitasri Pal | No.1 | 10 | January 2007 | 5 |
| 4 | Psychological disorders related to pregnancy | Bulletin of the NIH | 0972-6276 | Dr. Gitasri Pal Dr.Sayeed Akhtar | No.1 | 11 | January 2008 | 29 |

Dr.Gitasri Pal

Reader

Homoeopathic Pharmacy

1. Panakkada D, 'Arsenic and its compounds in Homoeopathy', Bulletin of National Institute of Homoeopathy, Vol 2, (2), April-1999.

2. Panakkada D, 'Sambucus nigra, Linn.', Bulletin of National Institute of Homoeopathy, Vol 6,(4), Oct-2003, ISSN 0972-6276.

3. Panakkada D, Dinda S R, 'Experimental Pharmacology in relation to Homoeopathy with examples of some recent research works', Bulletin of National Institute of Homoeopathy, Vol.16, No.4, Oct, Pg.16, ISSN 0972-6276.

4. Panakkada D, Mondal D, 'Obesity and its Homoeopathic Management', National Homoeo Recorder (A peer reviewed Journal), Vol 10, No.1, Jan – Mar 2014, Pg. 30-35, ISSN 2348-6880.

5. Panakkada D, Kaur Roy V, 'Polycystic Ovarian Syndrome – a general concept', National Homoeo Recorder (A peer reviewed Journal), Vol.10, No.1, April-June 2014, ISSN 2348-6880.

6. Naaz A, Panakkada D, 'Research and Homoeopathy', Homoeopathic Heritage, Vol 42, No 8, Nov 2016, ISSN 9070-6038.

7. Goenka R, Panakkada D, 'Efficacy of individualized Homoeopathic treatment of chronic suppurative otitis media: double blind, randomized placebo-controlled trial', National Homoeo Recorder (A peer reviewed Journal), Vol 14, No.4, Oct – Dec 2018, Pg. 9-16, ISSN 2348-6880.

8. Panakkada D, 'Need of Pharmacovigilance in Homoeopathy', Compendium of invited articles on Pharmacovigilance, Ayusuraksha Nov -2019.

This is to inform that Dr. Gitasri Pal delivered lectures as resource person in the below mentioned occasions.

| Name of Resource Person | Topic | Organising Institute | Occasion | Date |
|---|---|---|---|---|
| Dr Gitasri Pal | Relation of Pharmacy with Materia medica | NIH, Materia medica dept. | ROTP,Materia medica | 18.11.2008 |
| Dr Gitasri Pal | Source of Hom. Drug | N.I.H | Induction training in AYUSH system imparted to newly joined doctors of CHS | 22.05.2017 |
| Dr Gitasri Pal | Source of Hom. Drug | N.I.H | Foundation training program of CHS doctors | 20.11.2017 |
| Dr Gitasri Pal | Thin Layer Chromatograph | N.I.H | Recent advances in Homoeopathy, for teaching Faculties of Govt Hom Medical College Of Odisha | 16.09.2019 |
| Dr Gitasri Pal | Research works made by Pharmacy Dept, NIH | Homoeopathic Bijnan Parishad at South Calcutta Girls School,Kol-25 | Celebration of Hahnemann's Birth day | 20.05.2018 |

DR. Gautam Pal.

A. *Experience as Associate Editor (Technical) of the Bulletin of National Institute of Homoeopathy*, since 2008 to till 31.03.2017.

B. *Editor, Bulletin of the National Institute of Homoeopathy*, since April, 2018 to 31.12.2019.

C. Papers published in Peer-reviewed Journals:

1. Effects of homoeopathic single and minimum dose on non-radiographic axial spondyloarthritis – BASDAI Assessment; *Homoeopathic Links*, 2020; 33(1):41-52.
2. Gut Microbiota: In dynamics of life and homoeopathy; *Homoeopathic Links*, 2020; 33(4):

D. *Articles in Bulletin of The National Institute of Homoeopathy.*

1. Eczema: Scope of homoeopathy, 2(4):75-82, 1999;
2. Laws of causation and homoeopathy, 6(2): 54-56, 2003;
3. The concept of individualisation and its application in homoeopathy, 7(1): 29-36, 2004 (Co –author: Dr. Indrani Chakrabarti);
4. Black tarry stool: its causes and management, 8(4): 121-125, 2005;
5. Nail: a clinical perspective, 9(1): 18-22, 2006;
6. Philosophy, homoeopathy and materia medica,9(3): 108-112, 2006;
7. Two drops from the ocean of homoeopathic success, 10(3): 108-110, 2007;
8. Behavioral problems and habit disorders in children, 11(3): 85-116, 2008 ( Co-authors: Divya Agarwal, Mithun Banik, Dr. Haraprasad Panda);
9. Totality on single symptom: the bird's eye view, 12(2): 63-66, 2009;
10. Study of materia medica in light of practice of medicine, 13(2): 70-75, 2010;
11. Prostatomegaly with moderately high value of PSA; a case of sick individual, 13(4): 184-187, 2010;
12. Organon and homoeopathic philosophy in relation to repertory, 14(3): 129-135, 2011;
13. A review on aggravation of 50 – millesimal potency; 16(2):72 – 84, 2013;
14. Study of symptoms of dengue or dengue-like fever episode occurred at Salt Lake, Kolkata in 2012 and searching for its genus epidemicus; 17(1):38 – 42, 2014.
15. Dynamic nature of Molluscum contagiosum; 18(1):30 – 31, 2015.
16. A review on prevailing mode of teaching of clinical subjects in homoeopathic educational curriculum; 19(1):5-11, 2016

E. *Worked as coordinator for compilation of materials related to Hand book on MCH for CCRH on behalf of National Institute of Homoeopathy.*

F. *Contributor to 'Pockete Chikitsa', a popular handbook in Bengali compiled by Ms. Sujata Mukherjee;*

G. Contributor to 'Crack the entrance', authored by Dr. Jithesh TK & Dr. Anil K.

List of Publications of

Dr Ajoy Kumar Chowdhury, Reader

Dept of Physiology & Biochemistry, NIH, Kolkata

| Sl. No. | Name of the article | Name of the Journal | ISSN | Name of the Author | Issue No. | Volume No. | Month | Page No. |
|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | Biochemical investigation and its interpretation | Bulletin of the National Institute of Homeopathy | 0972-6276 | Dr Ajoy Kumar Chowdhury | 2 | 3 | April 2000 | 34 |
| 2 | Anti Nuclear Antibodies | Bulletin of the National Institute of Homeopathy | 0972-6276 | Dr Ajoy Kumar Chowdhury | 4 | 4 | October 2001 | 59 |
| 3 | Tumor Markers | Bulletin of the National Institute of Homeopathy | 0972-6276 | Dr Ajoy Kumar Chowdhury | 2 | 5 | April 2002 | 1 |
| 4 | Role of Nitric Oxide in infections | Bulletin of the National Institute of Homeopathy | 0972-6276 | Dr Ajoy Kumar Chowdhury | 4 | 5 | October 2002 | 10 |
| 5 | Morbidity Survey of Cardiovascular patients Admitted in Indoor of a Homeopathic Hospital | Asian Journal of Homoeopathy | 0975-4156 | Dr Arup Das, Dr Ajoy Kumar Chowdhury, Dr D Basu | 4(17) | 5 | Nov 2011-Jan 2012 | 42 |

Name of the Officer: Dr. Kalasapakam Vijay Ananth.

Department: Anatomy

Post Held: Lecturer

Date of joining National Institute of Homoeopathy: 30.12.2010

A) Attended the Annual Conference of Anatomical Society of India, West Bengal Chapter-

1.) On 18th January, 2011
2.) On 18th January, 2012
3.) On 18th January, 2013
4.) On 19th January, 2015
5.) On 10th January, 2017
6.) In the month of January, 2020

B) Conducted Annual Conference of Anatomical Society of India (ANACON), West Bengal Chapter in the year 2016 at National Institute of Homoeopathy, organized by the Department of Anatomy for all the State Medical Colleges.

C) Conducted the B.H.M.S Entrance Examination for these centers in those years-

1.) At Thiruvanathapuram in the month of June, 2013
2.) At Bhopal in the month of month of June 3rd, 2012
3.) At Chennai in the month of June, 2011

D) Organized and Conducted a Arogya Mela for National Institute of Homoeopathy in the National Arogya Mela organized by Ministry of AYUSH with collaboration with the Confederation of Indian Industries and State Govt. of Tamil Nadu at Chennai Trade Center, organized at Chennai from 05th to 8th May, 2017. Team set up a stall for NIH for seeing patients and circulating NIH & AYUSH brochures to the visitors.

E) Organized and Conducted a 12th Jatiya Sanghati Utsav-o-Bharat Mela, 2016 held at 24th Paraganas (south) Kolkata from 14th- 18th December, 2016 visited with medical team and conducted the program by seeing patients, dispensing medicines and pamphlets pertaining to AYUSH and NIH oriented services to public the undersigned was assigned the duty on 18.12.2016.

F) Participated National level Arogya Expo at Science City, Kolkata organized by Ministry of AYUSH, Govt. of India in collaboration with 7th World Ayurvedic Foundation from 1st to 4th December, 2016. Team set up a stall for NIH for seeing patients and circulating NIH & AYUSH brochures to the visitors. The undersigned was assigned the duty on 04.12.2016.

G) Attended Scientific Convention on World Homoeopathy Day from 10th April to 11 April 2018, conducted at New Delhi.

H) Undertaken to conduct a C.C.H Inspection at C. N. Kothari Homeopathic Medical College, Vyara on 10.05.2019.

*Case Report*

Indian Journal of Anatomy
Volume 7 Number 3, May - June 2018
DOI. http://dx.doi.org/10.21088/ija.2320.0022.7318.24

# Biceps Anatomical Aberration in a Cadaveric Study

Vijay Ananth K.

Abstract

In a routine cadaveric dissections in a cadaver the short head of Biceps Brachii tendon (SHBT) showed bifurcated in attachment with the belly of the Pronator Teres muscle seen along with its usual course of attachment with the radial tuberosity. This was seen bilaterally on both the upper limbs in the same body during the anatomical dissection. Here the biceps brachii was originating from the long head from the supraglenoid tubercle from the capusular joint and the short head from the coracoid process of scapula.

**Keywords:** Biceps Brachii and Pronator Teres Muscle; Extrarticular Insertion; Cadaver.

## Introduction

In the upper extremity the anterior compartment forms the flexor group muscles of which along with the coracobrachialis the Biceps Brachii plays a major role in flexing the arms and the elbow joint. It compensates the action with the Triceps Brachii the posterior compartment muscle of the brachium which forms the extensors.

It is a large fusiform muscle of that compartment [3,8] and a primary supinator of the forearm. Biceptal aponeurosis, a triangular band formed from the deep fascia originates from the biceps tendon. This aponeurosis gives protection to the cubital fossa. A third head is also reported seen posterior to the brachial artery [8].

It originates from long and short heads from supraglenoid tubercle and coracoids process of scapula respectively.

And both the heads converge with the two belles and gets inserted into the posterior part of the tuberosity of radius bone [9].

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**Fig. 1:** Rt. Side Arm

Figure 1 shows Biceps Brachii in the front of forearm and the Cubital fossa below.

Red arrow shows the LHBT inserting into the radial tuberosity.

Green arrow shows the SHBT and its extrarticular insertion was seen in the pronator teres muscle which is the medial border of Cubital Fossa (Fig. 1).

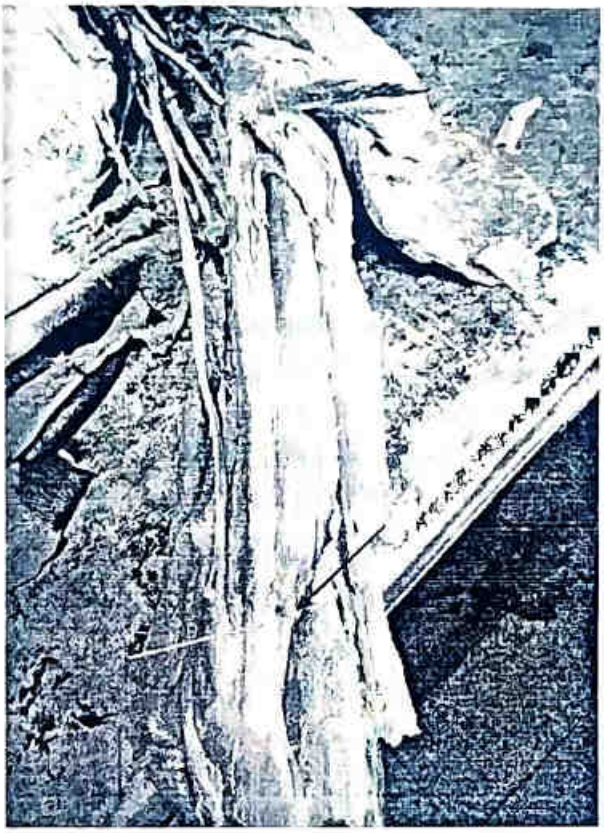

Fig. 2: Lt. Side Arm

Figure 2 shows Biceps Brachii in the front of forearm and the Cubital fossa below.

Red arrow shows the LHBT inserting into the radial tuberosity.

Green arrow shows the SHBT and its extrarticularinsertion was seen in the pronator teres muscle which is the medial border of Cubital Fossa (Fig. 2).

## Case Report

In the year 2016 a male cadaver was procured to the Dept. of Anatomy, National Institute of Homoeopathy for the dissection purpose regarding teaching and training the undergraduate students which was procured from the R.G. Kar Medical College through the Director of Medical Education. It is know that such anatomical aberration may be seen due to any congenital or as anatomical anomalies. The short head of Biceps Brachii and the long head originated from their respective course but this extrarticular insertion was seen in the pronator teres muscle for the SHBT but the LHBT got inserted into the tuberosity of radius as usually. The arterial and nerve supply was normal.

## Discussion

Different origin was noted in some case studes like The supernumerary head was a bulky muscle belly and originated from the medial lip of the intertubercular groove [1]. The absence of the long head of the biceps (LHB) tendon as reported in the fourth case of bilateral congenital anamaly of the LHB tendon under clinical studies conducted by using Ultrasonography (US) and magnetic resonance (MR) when the patient experienced anterior shoulder pain at rest that exacerbated with overhead activities. The pain was moderate for months but worsened in the last few weeks, specially seen after sports activity in another study by Rego Costa and et al. [6].

In one particular study 74 cadavers were dissected and observed in one year based on its variations in shape and insertion of the Biceps Brachii were found in 10 out of 74 cadavers (13,5%). In which 20 arms of the 10 cadavers, 14 had variations, thus, in 148 analyzed arms, only 9,4% varied. Bilateral variation occurred in 4 arms, and 2 of them were symmetric. Eight different types of variations were found in Brazilians as per Denize Augusto da Silva and others [4].

Bergman, Thompson and Afifi reported that the two heads of biceps brachii muscle may be totally separate or fused and either head may be absent. In the absence of long head, the tendon may be found arising from the bicipital groove, one of the tubercles of humerus, the capsule of then shoulder joint or the tendon of pectoralis major [2]. In a similar study by Hyman and Warren too came across an extra-articular origin of the long head of biceps brachii [7]. Sharadkumar Pralhad Sawant and others observed that in undergraduate dissections a male donated cadaver showed that the short head of the biceps brachii muscle got inserted into the radial tuberosity of the radius separately. The long head got inserted into the radial tuberosity and bicipital aponeurosis though the orgin was as usual [5]. In a detailed study by Subhalakshmi Wahengbam and others in a 35 adult cadavers which were dissected and observed for variations in the origin and insertion of biceps brachii muscle bilaterally. Among the 70 arms studied, three had 3-headed biceps brachii, 2 on the left and 1 on the right side.

All the third heads were of humeral origin, which inserted into the radial tuberosity by a common tendon with the long and short heads [10]. All such anomalies can be visualised during the daily activities or in extreme physical work but in the present work as the Cadaver was procured from the mortuary no details

of the case history is recorded or was available. Further it is possible the individual may have some discomfort in flexing the elbow but that must have substantiated with the Pronation muscles during his life.

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WILEY InterScience

# Evaluation of the Growth Inhibitory Activities of Triphala against Common Bacterial Isolates from HIV Infected Patients

**R. Srikumar[1], N. Jeya Parthasarathy[1], E. M. Shankar[2], S. Manikandan[1], R. Vijayakumar[1], R. Thangaraj[3], K. Vijayananth[3], R. Sheeladevi[1]* and Usha Anand Rao[2]**

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**The isolation of microbial agents less susceptible to regular antibiotics and the rising trend in the recovery rates of resistant bacteria highlights the need for newer alternative principles. Triphala has been used in traditional medicine practice against certain diseases such as jaundice, fever, cough, eye diseases etc. In the present study phytochemical (phenolic, flavonoid and carotenoid) and antibacterial activities of aqueous and ethanol extracts of Triphala and its individual components (*Terminalia chebula*, *Terminalia belerica* and *Emblica officinalis*) were tested against certain bacterial isolates (*Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Shigella sonnei*, *S. flexneri*, *Staphylococcus aureus*, *Vibrio cholerae*, *Salmonella paratyphi-B*, *Escherichia coli*, *Enterococcus faecalis*, *Salmonella typhi*) obtained from HIV infected patients using Kirby-Bauer's disk diffusion and minimum inhibitory concentration (MIC) methods. *T. chebula* was found to possess high phytochemical content followed by *T. belerica* and *E. officinalis* in both aqueous and ethanol extracts. Further, most of the bacterial isolates were inhibited by the ethanol and aqueous extracts of *T. chebula* followed by *T. belerica* and *E. officinalis* by both disk diffusion and MIC methods. The present study revealed that both individual and combined aqueous and ethanol extracts of Triphala have antibacterial activity against the bacterial isolates tested. Copyright © 2007 John Wiley & Sons, Ltd.**

*Keywords:* Triphala; Kirby-Bauer's disk diffusion; zone of clearance; minimum inhibitory concentration.

## INTRODUCTION

Antibiotic resistance has become a global concern (Westh *et al.*, 2004). Antibiotics exist in large numbers in today's pharmaceutical market. Despite that, their usage is becoming increasingly restricted; the reason being attributed largely to the development of drug resistance among microorganisms. In addition, the phenomenon is coupled by the toxicity possessed by many of the conventionally prescribed antimicrobials, warranting a search for newer antimicrobial agents that could substantially overcome some of these drawbacks.

There has been a worldwide move towards the use of traditional medicines due to concerns over the more invasive, expensive and potentially toxic mainstream practices (WHO, 2002). Numerous studies have identified compounds within herbals that are effective antibiotics (Basile *et al.*, 2000; Cowan, 1999). Traditional healing systems around the world that utilize herbal remedies are an important resource for the discovery of new antibiotics (Okpekon *et al.*, 2004). Certain traditional remedies have already been reported to be effective against drug-resistant bacteria (Kone *et al.*, 2004; Sato *et al.*, 2000).

Interestingly, the effects of fruit extracts on bacteria have been studied by numerous researchers world-wide (Reddy *et al.*, 2001; Erdoğrul, 2002; Atefl and Erdoorul, 2003). In addition, much work has been focused on ethnomedicinal plants in India (Maheshwari *et al.*, 1986; Rai, 1989; Negi *et al.*, 1993). It has been suggested that ethanol and aqueous extracts from plants are potential sources of antimicrobial agents (Chung *et al.*, 1995; Vlietinck *et al.*, 1995). The selection of crude plant extracts for screening programmes has the potential of being more successful as an initial step than the screening of pure compounds isolated from natural products (Kusumoto *et al.*, 1995).

Triphala is a traditional ayurvedic herbal formulation, consisting of equal parts of three medicinal plants namely *T. chebula*, *T. belerica* and *E. officinalis*. Triphala has been used extensively as a drug against a number of diseases (Awasthi and Nath, 1986; Reddy *et al.*, 1990). The fruits of Triphala are claimed to have antiviral and antibacterial effects (Hozumi and Oyama, 1997). Moreover, Triphala is prescribed for various symptoms of infections, fatigue, assimilation and infectious diseases such as tuberculosis, pneumonia, AIDS (El-Mekkawey and Merelhy, 1995), periodontal diseases, (Abraham *et al.*, 2005) and has been reported to reduce considerably the damage due to oxidative stress in experimen-

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Contract/grant sponsor: University Grant Commission, Government of

**Table 1. Plant materials used in Triphala formulation**

| Scientific name | Family | Harvested period | Part used |
|---|---|---|---|
| *T. chebula* | Combretaceae | January | Seedless dry fruits |
| *T. belerica* | Combretaceae | December | Seedless dry fruits |
| *E. officinalis* | Euphorbiaceae | December | Seedless dry fruits |

The present study investigates the phytochemical and antibacterial efficacies of ethanol and aqueous extracts of Triphala and its individual plant components against certain bacterial isolates recovered from HIV infected patients using the conventional Kirby-Bauer's disk diffusion and MIC methods.

## MATERIALS AND METHODS

**Plant materials.** Fruits belonging to the Triphala formulation were collected from The Chief Botanist (Tamilnadu Medicinal plant farms and Herbal Medicine Corporation (TAMPCOL)) Ltd, Chennai, India and authenticated by The Director of Centre for Advanced Studies on Botany, University of Madras, India (No.ARC/DO-NA/Authentication/2005/1830) (Table 1). The seedless fruits were dried under shade and powdered before use.

**Aqueous extract.** The seedless fruits of Triphala and its individual components were ground to fine powder, maintained at 60 °C for 3 h in sterile distilled water. The resulting suspensions were filtered and evaporated for dryness at 60 °C *in vacuo*.

**Ethanol extract.** The seedless fruits of *T. chebula T. belerica* and *E. officinalis* and combined (Triphala formulation) were placed in a soxhlet extractor containing 70% of ethanol. The resulting extracts were subsequently weighed before usage in the study.

**Phytochemical study.** The phytochemical study was designed to estimate phenolic, flavonoid and carotenoid components present in the aqueous and ethanol extracts of Triphala and its individual fruit components.

**Isolation and estimation of phenolics.** Isolation and estimation of phenolics was performed using protocols suggested by Price *et al.* (1980). Briefly, 5 g of the sample was homogenized thoroughly in 200 mL of acetone using a mortar and pestle, transferred to a stoppered flask and kept overnight in a shaker. The supernatant was collected and the residue was extracted twice with 10 mL acetone. The collected extracts were pooled and filtered through Whatman No.1 filter paper and the filtrate was centrifuged at 3000 × g for 10 min. The resultant supernatant was used for the estimation of total phenolics. One milliliter of distilled water was added to 25 µL of extract. To this preparation, 25 µL of acetone and 60 µL of ferric ammonium sulphate were added and kept at room temperature for 20 min. Later, 60 µL of potassium ferricyanide was added and the absorbance was measured at 720 nm after 20 min using quercetin as a standard. The total phenolics was

**Isolation and estimation of flavonoids.** The isolation and estimation of flavonoids was carried out using protocols suggested by Harborne (1975) and Lamaison and Carnat (1990). Flavonoids are generally present as their glycosides and were hydrolysed before the free flavonoids were assayed. Briefly, 5 g of the sample was acid hydrolysed with 10 mL of 1 N sulphuric acid at 70 °C for 1 h and neutralized with 0.5 mL of 10 N NaOH. To this 5 mL of ethyl acetate was added, shaken well and the ethyl acetate portion was collected. This was repeated thrice and the ethyl acetate was pooled and evaporated to dryness. The residue was reconstituted with 1 mL of HPLC grade methanol and assayed for total flavonoid content. From the extract, 1 mL of extract was mixed with 1 mL of 2% methanol $AlCl_3$ and the absorbance was measured at 430 nm using a double beam Perkin Elmer UV/Visible spectrophotometer (USA).

**Extraction and estimation of total carotenoids.** Extraction and estimation of phenolics was performed by protocols suggested by Narayanaswamy and Palanisami (1973). Briefly, 5 g of the sample was homogenized in 20 mL of acetone using a mortar and pestle, and filtered using Whatman No. 1 filter paper. The extraction was repeated until free from pigments. The filtrate was pooled and partitioned with an equal quantity of peroxide free ether, thrice using the separating funnel. The ether phase containing carotenoids was evaporated and the residue was dissolved in 1 mL ethanol. Subsequently, 0.1 mL of 60% KOH was added and partitioned twice in peroxide free ether. The ether was evaporated and the residue was dissolved in 0.5 mL ethanol, before measurement of carotenoids. The extract was measured at 450 nm for absorbance and the carotenoids present were estimated using the formula:

$$C = D \times V \times F/2500$$

where $C$ is the total carotenoids, $D$ is the absorbance at 450 nm in a 1 cm cell, $V$ is the volume of original extract in mL, $F$ is the dilution factor and 2500 is the average extinction coefficient of the pigments. The carotenoids were expressed as µg/g sample.

**Disk preparation.** Sterile blank diffusion disks were placed into labelled trays for each ethanol or aqueous

**Table 2. The aqueous and ethanol extracts yield of Triphala and its individual components**

| Plant | Aqueous (%) | Ethanol (%) |
|---|---|---|
| Triphala | 12 | 14 |
| *T. chebulla* | 12 | 16 |
| *T. belerica* | 13 | 15 |
| *E. officinalis* | 12 | 18 |

extract. A 10% extract was prepared using the respective solvents and from this preparation, disks with various concentrations were prepared by saturation with 5 µL of the individual aqueous or ethanol extracts. Control disks were prepared by saturating sterile blank disks in either ethanol or sterile distilled water and allowed for evaporation.

**Bacterial dilution.** The bacterial isolates used were clinical isolates from urethral swabs, seminal fluid, urine, high vaginal swabs, skin swabs, blood and sputum specimens of HIV infected patients. The isolates were identified by standard culture and biochemical methods in the microbiology laboratory. The organisms were maintained on an agar slope at 4 °C and sub-cultured for 24 h before use. Isolated colonies of the bacteria were placed into individual tubes containing 5 mL of sterile brain-heart infusion broth (BHIB) (Himedia, Mumbai, India) and incubated at 37 °C, before adjusting the tubes with 0.5 McFarland Units using sterile BHIB. Turbidity was also verified using spectrophotometric comparison with a 0.5 McFarland standard. The dilutions were used within 15 min of preparation and gently vortexed prior to use.

**Disk diffusion analysis.** The standardized inoculum ($1–2 \times 10^7$ cfu/mL 0.5 McFarland standards) was introduced on the surface of sterile Mueller-Hinton agar (Himedia, Mumbai, India) (MHA) (pH 7.2–7.4) plates using sterile cotton swabs. The inoculations were done along three axes in a rolling motion to ensure uniform bacterial distribution and growth. After the plates were labeled, the disks were placed on the surface of the agar, inverted and incubated at 37 °C for 16 h. Measurements were made from the outer edge of the disks to the inner edge of any zones of clearance produced.

**Minimum inhibitory concentration (MIC).** The MICs were determined using the MH broth-dilution method. The extracts, sterilized by 0.45 mm Millipore filters, were added to MH broth medium. Serial 10-fold dilutions were made that furnished a concentration range from 0.01 to 1000 mg/mL for each extract. The tubes were incubated aerobically at 37 °C for 18–24 h. Two control tubes were maintained. These included an antibiotic control (tube containing extract and the growth medium without inoculum) and an organism control (the tube containing the growth medium, physiological saline and the inoculum). The lowest concentration (highest dilution) of the extract that produced no visible bacterial growth (no turbidity) when compared with the control tubes were regarded as the MIC.

## RESULTS AND DISCUSSION

In addition to the increased magnitude of emergence of bacterial drug resistance, high-dosage and prolonged antimicrobial therapy could eliminate beneficial bacterial commensals predisposing to pathogen invasion (Carson and Riley, 2003; Guarner and Malagelada, 2003). Phytonutrients are plant-derived, naturally occurring compounds possessing antimicrobial, curative, preventative and nutritive values (Balentine and Albano, 1999; Craig and Beck, 1999).

The present study investigated the antibacterial effects of aqueous and ethanol extracts of Triphala and its individual plant components against certain common bacterial isolates recovered from HIV infected patients. Both the aqueous and ethanol extracts of *T. chebula* were found to possess inhibitory effects against most of the isolates tested, followed by *T. belerica* and *E. officinalis*. However, *P. aeruginosa*, *S. paratyphi-B* and *S. typi* were resistant to both the extracts investigated. The study also showed that most of the isolates tested were more sensitive to the ethanol extract than the aqueous one. *T. chebula* was the only aqueous extract that showed inhibitory activity against *S. sonnei*, *S. flexneri*, *V. cholerae*, *E. coli* and *E. faecalis* (GI tract pathogens), while the rest of the aqueous extracts failed to show any zone of clearance (Table 3).

The MIC method showed that most of the bacterial isolates were sensitive to both the aqueous and ethanol extracts of Triphala and its individual components. Further, *S. sonnei*, *S. flexneri* and *Staph. aureus* were sensitive at low concentrations (0.01 µg/mL) of ethanol extracts of *T. chebula*. In addition, the aqueous extract possessed antibacterial activity against most of the isolates tested except *K. pneumoniae* and *S. typhi* (Table 4).

**Table 3. Antibacterial activity of aqueous and ethanol extracts of Triphala and its individual plant components by Kirby-Bauer's disk diffusion**

| Bacterial isolate | Concentration (5 µL) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | ATc | ATb | AEo | AT | ETc | ETb | EEo | ET |
| *Pseudomonas aeruginosa* | – | – | – | – | – | + | – | + |
| *Klebsiella pneumoniae* | – | – | – | – | – | – | – | – |
| *Shigella sonnei* | + | – | – | – | ++ | ++ | + | + |
| *Shigella flexneri* | + | – | – | – | ++ | + | + | + |
| *Staph. aureus* | + | – | – | – | ++ | + | + | + |
| *Vibrio cholerae* | + | – | – | – | + | + | + | + |
| *Salmonella paratyphi-B* | – | – | – | – | – | – | – | – |
| *Escherichia coli* | + | – | – | – | + | + | + | + |
| *Enterococcus faecalis* | + | – | – | – | + | + | + | + |
| *Salmonella typhi* | + | – | – | – | – | – | – | – |
| Solvent (aqueous/ethanol) | – | – | – | – | – | – | – | – |

–, no antibacterial activity; +, zone of inhibition less than 4 mm; + +, zone of inhibition 4–10 mm; ATc, aqueous extract of *T. chebula*; ATb, aqueous extract of *T. belerica*; AEo, aqueous extract of *E. officinalis*; AT, aqueous extract of Triphala; etc, ethanol extract of *T.*

**Table 4. Minimum inhibitory concentration of aqueous and ethanol extracts (µg/mL) of Triphala and its individual plant components**

| | AT | ATc | ATb | AEm | ET | ETc | ETb | EEm |
|---|---|---|---|---|---|---|---|---|
| *P. aeruginosa* | 100 | 10 | 100 | R | 0.1 | 0.1 | 0.1 | 10 |
| *K. pneumoniae* | R | 100 | R | R | 10 | 10 | 10 | 10 |
| *S. sonnei* | 10 | 0.1 | 100 | 100 | 0.1 | 0.01 | 0.1 | 0.1 |
| *S. flexneri* | 10 | 0.1 | 10 | 100 | 0.1 | 0.01 | 0.1 | 0.1 |
| *Staph. aureus* | 10 | 0.1 | 10 | 100 | 0.1 | 0.01 | 0.1 | 0.1 |
| *V. cholerae* | 10 | 0.1 | 10 | 100 | 0.1 | 0.1 | 0.1 | 0.1 |
| *S. paratyphi-B* | 10 | 0.1 | 10 | 100 | 0.1 | 10 | 10 | 100 |
| *E. coli* | 10 | 0.1 | 10 | 100 | 0.1 | 0.1 | 0.1 | 0.1 |
| *E. faecalis* | 10 | 0.1 | 10 | 100 | 0.1 | 0.1 | 0.1 | 0.1 |
| *Salmonella typhi* | 100 | 0.1 | R | R | 10 | 10 | 10 | 100 |

MIC values are expressed as µg/mL: R, no inhibition even at the highest tested concentration. AT, aqueous extract of Triphala; ATc, aqueous extract of *T. chebula*; ATb, aqueous extract of *T. belerica*; AEm, aqueous extract of *E. officinalis*; ET, ethanol extract of Triphala; Etc, ethanol extract of *T. chebula*; ETb, ethanol extract of *T. belerica*; EEm, ethanol extract of *E. officinalis*.

**Table 5. The phytochemical (phenolics, flavonoids and carotenoids), in aqueous and ethanol extracts of Triphala and its individual fruit components**

| Drug | Phenolics (µg/g) | Flavonoids (µg/g) | Carotenoids (µg/g) |
|---|---|---|---|
| Aqueous extract | | | |
| *T. chebula* | 9 084 | 712 | 196 |
| *T. belerica* | 8 256 | 624 | 166 |
| *E. officinalis* | 9 520 | 682 | 194 |
| Triphala | 8 026 | 680 | 184 |
| Ethanol extract | | | |
| *T. chebula* | 11 260 | 806 | 322 |
| *T. belerica* | 10 860 | 740 | 286 |
| *E. officinalis* | 8 620 | 710 | 280 |
| Triphala | 10 600 | 724 | 300 |

Triphala and its individual components showed antibacterial effect on both Gram-positive as well as Gram-negative bacteria, which suggests the ingress of active phytochemicals through both the bacterial cell walls. In the present study ethanol extracts showed high antibacterial activity compared with aqueous extracts, which might possibly be due to the lesser solubility of the active constituents in aqueous solutions, resulting in less or almost no antibacterial effect on the bacterial isolates tested at lower concentrations. The percentage of individual and combined formulation of Triphala extract yields (aqueous and ethanol) is given in Table 2. The ethanol extract yield was more (in both Triphala and individual plant components) than the aqueous extract yield. Furthermore, the phytochemical analysis on *T. chebula* showed the existence of higher phenolic, flavonoid and carotenoid contents in its ethanol extracts than the aqueous extract, followed by Triphala, *T. belerica* and *E. officinalis*, respectively (Table 5).

Most of the antibiotic compounds already identified in herbs are reportedly aromatic or saturated organic molecules which makes ethanol an ideal solvent (Cowan, 1999). Albeit the ethanol extract of *E. officinalis* showed 18% yield, it showed poor antibacterial activity, possibly due to the high temperature during the extraction procedure, which in turn could have substantially denatured the active constituents responsible for antibacterial activities. It has been reported by some researchers that certain phytocompounds, such as phenolics, flavonoids and carotenoids possess antibacterial activities (Lin *et al.*, 2005; Alzoreky and Nakahara, 2003; Mahanom *et al.*, more sensitive to *T. chebula* than *T. belerica* and *E. officinalis* could be due to the presence of a high phytochemical content. Nevertheless, Triphala preparation has been reported to contain numerous flavonoids including procyanidin and quercetin, the existence of other ingredients warrants more studies. Moreover, the mechanisms behind the antibacterial activity are complex to understand and could be attributed to either inhibiting the cell division or to damaging the cell walls of bacteria; which however requires to be investigated in detail.

## CONCLUSION

In conclusion, this study showed Triphala and its individual fruit components of Triphala have potent antibacterial action against the wide spectrum of bacterial isolates from HIV infected patients. This antibacterial activity may be due to the presence of phytochemicals, which warrants Triphala be subjected to extensive preclinical and clinical antibacterial experimentations in the future to treat certain diseases due to infectious agents.

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**LIST OF PUBLICATIONS**

| Sl. No. | Name of the Article | Name of the Journal | ISSN | Name of the Author(s) | Issue No. | Volume No. | Month/ Year | Page no |
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| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | Echoes of the puritans Gentry's Concordance Repertory | Bulletin of the National Institute of Homoeopathy | 0972-6276 | Dr. Amit Kumar Agrawal<br>Dr. Lokanath Behera | 3 | 14 | July 2011 | 115-123 |
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Articles Published: Dr Prasanta Rath

| Sl no | Name of the article | Name of the Journal | Date | Co Authors |
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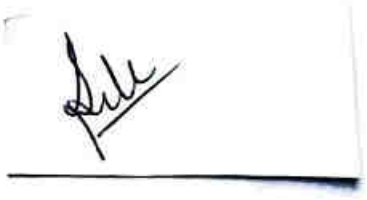

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|---|---|---|---|---|---|
| | | | Date/Year | Issue | Volume |
| 1. | Role of Homoeopathy in Preventive & Social Medicine | *Bulletin of the National Institute of Homoeopathy* | Jan. 1999 | 1 | 2 |
| 2. | Homoeopathic Magic – The earliest concept of Similarity (or does Homoeopathy have its origin in Magic?) | *Bulletin of the National Institute of Homoeopathy* | Jan. 2001 | 1 | 4 |
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| 10. | Vaccinated: To Be Or Not To Be? | *The Journal of Homoeo Transmission* | May-June, 2001 | 2 | VI |
| 11. | Suicide | *XIII All India Homoeopathic Seminar* | 2003 | | |
| 12. | Lactational Disorders | *Bulletin of the National Institute of Homoeopathy* | Jan. 2008 | 1 | 11 |
| 13. | Prescription on Keynote Symptoms | *Principia Homoeopathica* | June, 2008 | VII | 1 |
| 14. | A Short History of Study of Cardiology | *Principia Homoeopathica* | Aug. 2008 | IX | 1 |
| 15. | A Study of Repertory to the Cyclopedia of Drug Pathogenesy, compiled by Dr. Richard Hughes | *HOMEOBUZZ* | June 2009 | 6 | 4 |
| 16. | Homoeopathic Treatment of Bronchial Asthma | *Souvenir of Homoeopathic Scientific Seminar National Level* | 24 January 2010 | | |
| 17. | Suicide and Homoeopathy | *Souvenir of International Seminar On Recent Advances In Homoeopathy* | 19-21st Feb. 2010 | | |
| 18. | The Basics of Miasm | *IHK NEWS* | Dec. 2010 | 6 | XXV |
| 19. | Recent criticism on Homoeopathy: Retrospection | *Bulletin of the National Institute of Homoeopathy* | Oct. 2010 | 4 | 13 |
| 20. | Calcutta Method or Keynote Method Of Prescription | *Souvenir of REMINISCENCE 2011, Alumni Meeting of P.G. Students of S. K. H. M College, Beed* | April, 2011 | | |
| 21. | Shadows of Remedy | *Bulletin of the National Institute of Homoeopathy* | April 2011 | 2 | 14 |

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| 22. | Fragmentary Observation on Hahnemann's 'Fragmenta De Viribus Medicamentorum Positivis Sive in Sano Corpore Humano Observatis' | *Bulletin of the National Institute of Homoeopathy* | Oct. 2011 | 4 | 14 |
| 23. | Calcutta Method or Keynote Method Of Prescription | *Liga Medicorum Homoeopathica Internationalis 66th World Homoeopathic Congress 2011* | 1-4 Dec. 2011 | | |
| 24. | Study and Analysis of Human Kinesics with reference to Repertorial Rubric | *Bulletin of the National Institute of Homoeopathy* | July 2013 | 3 | 16 |
| 25. | Development of 'Introductions' in different editions of the Organon | *National Homoeo Recorder* | September-2013 | I-III | IX |
| 26. | A Review of Repetition of Doses in LM Potency | *National Homoeo Recorder* | January-March 2014 | I | X |
| 27. | Arthralgia-Study of 20 cases with Constitutional Homoeopathic Treatment | *National Homoeo Recorder* | January-March 2014 | I | X |
| 28. | Mesmerism-its History and application | *National Homoeo Recorder* | January-March 2014 | I | X |
| 29. | Artificial Chronic Diseases – a review | *National Homoeo Recorder* | July-Sept. 2014 | III | X |
| 30. | Albrecht Von Haller | *National Homoeo Recorder* | April-June 2014 | II | X |

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| 31. | Challenges for homoeopathy – both in dusk and glory | *National Homoeo Recorder* | July-September 2015 | III | XI |
| 32. | Study of Pulsatilla from a Cyclopaedia of Drug Pathogenesy by Richard Hughes with Comparison to Materia Medica Pura By Samuel Hahnemann | *National Homoeo Recorder* | July-Sept. 2015 | III | XI |
| 33. | A study on shadow of Sulphur | *National Homoeo Recorder* | Oct.-Dec. 2015 | IV | XI |
| 34. | Rectal Prolapse – A Case Study with Constitutional Homoeopathic Treatment | *National Homoeo Recorder* | Oct.-Dec. 2015 | IV | XI |
| 35. | Complex Affair: The Developmental Milestones of a Child | *National Homoeo Recorder* | Oct.-Dec. 2015 | IV | XI |
| 36. | A case of Prostatomegaly | *National Homoeo Recorder* | January-March 2016 | I | XII |
| 37. | A case of Focal Seizures (Complex Partial Seizures) with impairment of consciousness | *Souvenir*, 19th All India Homoeopathic Scientific Seminar 2015, Nagpur | 16th -17th Jan. 2016 | | |
| 38. | Homoeopathic Approach to a case of Primary Hypothyroidism | *National Homoeo Recorder* | April-June 2016 | II | XII |
| 39. | Geriatric problems – an overview | *Homoeo Pan (Souvenir – P.D. Jain Homoeopathic Medical College)* | 2016 | | |
| 40. | Action of Dulcamara in an Acute Exaggeration in a case of Chronic Eczema | *Homoeopathy The Friend of Health* | September, 2016 | 9 | 4 |

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| 41. | Homoeopathy in Treatment of Erectile Dysfunction | *Homoeopathy The Friend of Health* | November, 2016 | 11 | 4 |
| 42. | Editorial | National Homoeo Recorder | July 2016 – Dec 2017 | (3,4, 1-4) | 12 & 13 |
| 43. | Book review: Evidence-based Research of Homoeopathy in Gynaecology | National Homoeo Recorder | July 2016 – Dec 2017 | (3,4, 1-4) | 12 & 13 |
| 44. | Book review: Biostatistics and Research Methodology in Homoeopathy | National Homoeo Recorder | Jan-March, 2018 | 1 | 14 |
| 45. | Tautopathy – its Applicability in Clinical Practice | National Homoeo Recorder | Jan-March, 2018 | 1 | 14 |
| 46. | Protocol: Efficacy of individualized homoeopathic medicines in type II diabetes mellitus: A double-blind, randomized, placebo-controlled trial | National Homoeo Recorder | April-June, 2018 | 2 | 14 |
| 47. | Efficacy of individualized Homoeopathic Medicines in Type-II Diabetes Mellitus: a Double Blind, Randomized, Placebo Controlled Trial-A Research Protocol | *National Homoeo Recorder* | April-June 2018 | II | XIV |
| 48. | A survey assessing knowledge and attitude toward clinical research among the internees, new graduates and Post Graduate Trainees at NIH, Kolkata | *National Homoeo Recorder* | April-June 2018 | II | XIV |
| 49. | Book Review: Homoeopathy and Mental Health Care: integrative practice, principles and research by Christopher K. Johannes and Harry E. Van der Zee | *National Homoeo Recorder* | April-June 2018 | II | XIV |

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| 50. | Career preferences among the internees and postgraduate trainees at National Institute of Homoeopathy, India | National Homoeo Recorder | July-Sept, 2018 | 3 | 14 |
| 51. | Protocol: A double-blind randomized placebo-controlled clinical trial evaluating the efficacy of individualized homoeopathic medicines in treatment of knee osteoarthritis | National Homoeo Recorder | July-Sept, 2018 | 3 | 14 |
| 52. | Homoeopathy helps in tackling Air Pollution | *Luminos* | November 2018 | 1 | 2 |
| 53. | Editorial: The journey of National Homoeo Recorder | National Homoeo Recorder | Oct-Dec, 2018 | 4 | 14 |
| 54. | Homoeopathic treatment of heavy menstrual bleeding due to uterine fibroids in reproductive age group: An open-label, prospective, observational trial | National Homoeo Recorder | Oct-Dec, 2018 | 4 | 14 |
| 55. | Book review: Keynotes Advances & Complete: by Dr. Rohit Gupta | National Homoeo Recorder | Oct-Dec, 2018 | 4 | 14 |
| 56. | Efficacy of individualized homeopathic treatment of insomnia: Double-blind, randomized, placebo-controlled clinical trial | Complementary Therapies in Medicine, ELSEVIER. | 2019. | | 43 |
| 57. | Journey of concept of Health, Disease and Holistic medicine upto 21st Century | All India Homoeopathic Journal | Jan. 2019 | XIV | 01 |
| 58. | Homoeopathic treatment of large Endometrial Plyp: a case report | Homoeopathic Links | 2019 | 32 | 1/2019 |
| 59. | The role of homoeopathic treatment in individuals suffering from post-caesarean backache: An open observational clinical trial | Complementary Therapies in Medicine, ELSEVIER. | 2019. | (Submitted) | |

## PAPER PRESENTED AT CME, ROTP, SEMINARS, CONFERENCES & WORKSHOPS

| Sl. No. | Topic, Date, Place & other details |
|---|---|
| 1. | *"Rheumatoid Arthritis"* at IX All India Homoeopathic Seminar, Pune 1995 organised by Homoeopathic Medical Association of India, Pune City and District Unit at Balgandharva Rangamandir, Pune on 25th & 26th November 1995. |
| 2. | *"Cancer And Its Homoeopathic Treatment"* at Conference of Indian Homoeopathic Organisation, Raipur,(Madhya Pradesh) on 28th February, 1999. |
| 3. | *"Mental State & Symptoms for arriving at Totality"* at Bihar State Homoeopathic Conference, Darbhanga on 23rd May, 1999. |
| 4. | *"Evolution of Organon of Medicine, Various Literature of Hahnemann and Difficulties in Study and Teaching of Organon of Medicine"* at Teacher's Re-Orientation Programme in Organon of Medicine at J.J. Magdum Hom. Med. College, Jayasingpur (Maharashtra) on 15th & 16th October 1999. |
| 5. | *"Case-Taking in Homoeopathy"* at Scientific Seminar of International Society of Sahni Drug Transmission, Patna, (Bihar) on 17th January, 2000. |
| 6. | *"Falling of Hair & its Management"* at 2nd Dr. R. P. Mishra Memorial Vyakhanmala organised by Dr. R. P. Mishra Memorial Trust at Ghazipur, U.P. on 19th November 2000. |
| 7. | *"Different Angles of Prescription"* in the 6th Hooghly District Homoeopathic Practitioners' Convention, Uttarpara, W.B. on 17th December, 2000. |
| 8. | *"Dreams and Homoeopathy"* in the Scientific Seminar and 75th Birth Anniversary of Dr. B. Sahni organized by International Society of Sahni Drug Transmission at Patna (Bihar) on 17th January, 2001. |
| 9. | *"Rheumatoid Arthritis"* in Millennium National Scientific seminar' 2001 organised by Homoeopathic Medical Association of India at Hotel Taj Bengal on 29th July, 2001. |

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| 10. | *"Mind and Mental Symptoms"* in the symposium organised by Students Union of Burdwan Homoeopathic Medical College & Hospital at Rabindra Bhawan, Burdwan on 12th August, 2001. |
| 11. | *"Chikitsak Jobane Arogya Prapta Sera Roge Bibaran"* (In Bengali) at Dr. Mahendra Lall Sarkar Memorial Scientific Seminar organised by Homoeopathic Medical Association of India, Habra Unit, (W.B.) on 26th August, 2001. |
| 12. | *"Face to Face with Patients"* in the conference organised by Hahnemann Mission at Najrul Manch on 23rd December, 2001. |
| 13. | *"Problem in Education & Practice"* at 46th West Bengal Homoeopathic Conference'2001, organised by Purulia District Co-ordination Committee at Rabindra Bhawan, Purulia on 28th December, 2001. |
| 14. | *"Is Cancer Curable by Homoeopathy?"* at Jorasanko Thakurbari at Homoeopathic Seminar organised by Homoeopathic Medical League on 29th December, 2001. |
| 15. | *"Homoeopathic Education & Practice"* at 46th West Bengal State Homoeopathic Conference, 2001 at Rabindra Bhawan, Purulia organised by Purulia District Homoeopathic Coordination Committee, HMAI on 30th December, 2001. |
| 16. | *"Special Care in Case-Taking of Cardiac Patients"* at Symposium on Cardiac Diseases organised by Homoeopathic Graduates Association on 24th February 2002. |
| 17. | *"Homoeopathic Medicine is Capable to Produce Immunization"* at Homoeopathic Scientific Seminar organised by Homoeopathic Medical Association of India, Airport Unit, Kolkata on 10th March 2002. |
| 18. | *"Geriatrics and Homoeopathy"* at Hindi Bhawan, New Delhi, organised by Homoeopathic Medical Association of India, Delhi State Branch on 4th and 5th May, 2002. |
| 19. | *"Mental Disorders and Homoeopathic Management"* at All India Homoeopathic Scientific Seminar organised by Homoeopathic Medical Association of India, Uttar Pradesh State Branch on 7th September, 2002. |
| 20. | Attended Homoeopathic Teacher Seminar, New Delhi on 21 & 22nd September, 2002. |
| 21. | *"Dreams & its implementation in Homoeopathic Practice"* at Sanskrit Lokmanch, Burdwan in Scientific Seminar on 28th September 2002. |

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| 22. | *"Medicinal Plants and Homoeopathy"* in the Scientific seminar organised by All Sikkim Homoeopathic Association at Gangtok, Sikkim, on 30th November 2002. |
| 23. | Orientation Programme of PG Studies in Homoeopathy at Mahesh Bhattacharya Homoeopathic Medical College, Govt. Of West Bengal, Howrah on 2nd December 2002. |
| 24. | *"Geriatrics and Homoeopathy"* at 47th West Bengal State Homoeopathic Conference organised by Homoeopathic Medical Association of India, West Bengal State branch on 27th December, 2002. |
| 25. | *"Cancer and Homoeopathy"* at International Homoeopathic Conference, Hotel Jaypee Palace, Agra organised by Research Society of Homoeopathy on 9th February 2003. |
| 26. | *"Organon of Medicine"* at 7th District Conference at Uttaarpara, West Bengal on 16th March 2003. |
| 27. | *"Critical Study Of Different Editions Of Organon"* at NGRI, Hyderabad organised by Homoeopathic Postgraduates Medical Officers' Association, A.P. on 30th March 2003. |
| 28. | *"Diabetes Mellitus"* in the P.G. Scientific Seminar organised by Bhagwan Homoeopathic Medical College & Hospital, Aurangabad (M.S.) on 13th April, 2003. |
| 29. | *"Rare Remedies"* in National Homoeopathic Congress' 2003 organised by Classical Homoeopathic Foundation at Hotel Hyatt Regency on 19th May, 2003. |
| 30. | *"Problems of Teachers and their Solutions"* at 1st All Bengal Homoeopathic Teachers Conference at Kolkata on 13th July 2003. |
| 31. | *"History of Homoeopathy"* in the P. G. Scientific seminar organised at Mahesh Bhattacharya Homoeopathic medical College & Hospital, Howrah (W.B.) on 26th July, 2003. |
| 32. | *"Comparison of Homoeopathic Materia Medica with other system of Medicines"* in the P.G. Scientific seminar organised at Mahesh Bhattacharya Homoeopathic medical College & Hospital, Howrah (W.B.) on 27th July, 2003. |
| 33. | *"History of Medicine"* at All India Post-Graduate Seminar organised by Homoeopathic Medical Association of India, West Bengal State Branch on 25th December 2003. |

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| 34. | *"Doctor-patient Relationship"* at XIII All India Homoeopathic Seminar organised by Homoeopathic Medical Association of India, West Bengal State Branch on 26th December 2003. |
| 35. | *"Rheumatism: its Management & Homoeopathic Treatment"* at Scientific Seminar organised by Jhargram Sub Divisional Homoeopathic Doctor's Association, Jhargram, West Bengal on 19th February 2004. |
| 36. | *"The Life and Works of Dr. Hahnemann"* on Hahnemann Birthday Programme on 10th April 2004. (vide Office Order No. 8-30/NIH/2004/3274 dated 16-03-2004) |
| 37. | *"Evolution of Organon of Medicine"* at Post-Graduate Workshop organised by G.D. Memorial Homoeopathic Medical College & Hospital, Patna (Bihar) on 12th April 2004. |
| 38. | *"Doctor-Patient Relationship"* at Homoeopathic Practitioners Conference, Chandpara, West Bengal on 25th April 2004. |
| 39. | *"Evolution of Organon"* at Post-Graduate Workshop organised by G.D. Memorial Homoeopathic Medical College & Hospital, Patna (Bihar) on 6th May 2004. |
| 40. | *"Homoeopathic Materia Medica"* at Post-Graduate Workshop organised by G.D. Memorial Homoeopathic Medical College & Hospital, Patna (Bihar) on 7th May 2004. |
| 41. | *"Case Taking in detail - Study"* & *"Study Plan of Organon at PG Level"* at Post-Graduate Workshop organised by G.D. Memorial Homoeopathic Medical College & Hospital, Patna (Bihar) on 6th & 7th May 2004. |
| 42. | *"Clinical Application of Organon of Medicine"* at Workshop organised by Venkateswara Homoeopathic Medical College & Hospital, Chennai (Tamilnadu) on 17th August 2004. |
| 43. | *"Homoeopathic Prophylaxis"* at National Seminar organised by Mayurbhanj Homoeopathic Medical College & Hospital, Baripada (Orissa) on 4th September 2004. |
| 44. | *"Different School of Philosophy, etc. "* at State Homoeopathic Medical College and Hospital, Ghazipur, U.P. on 24th and 25th September 2004. |
| 45. | *"Importance of Mental Symptoms in Homoeopathy"* at National Homoeopathic Congress 2004 organised by Classical Homoeopathic Foundation at Indian Museum, ABC Hall, Kolkata on 27th & 28th November 2004. |

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| 46. | "*Homoeopathic Case Taking*" at National Homoeopathic Science Congress 2005 organised by The Homoeopathic Medical Association of India, Lucknow Unit, at Ganna Kisan Sansthan Dalibagh, Lucknow on 5th and 6th February 2005. |
| 47. | "*Homoeopathic Management of Malaria*" at The Continuing Medical Education Programme on 'Malaria' sponsored by Deptt. of AYUSH, Govt. of India at Dr. A. C. Homoeopathic Medical College & Hospital, Bhubaneswar on 12th and 13th February 2005. |
| 48. | "*Homoeopathic Approach in Endocrinal Disorders*" AT C.M.E. Programme organised by J.S.P.S. Govt. Homoeo Medical College, Ramanthapur, Hyderabad on 18th & 19th February 2005. |
| 49. | "*Role of Constitution, Temperament, Diathesis, etc..*" conducted one day workshop at Burdwan on 12th March 2005. |
| 50. | "*Case Presentation*" at 2nd National Seminar of Homoeopathic Specialists '05 organised by NVS Bio Research Pvt. Ltd. at Hotel Oberoi Grand, Kolkata on 17th April 2005. |
| 51. | "*Expectation from Students during House-Job and Remaining Part of M.D. (HOM) COURSE*" at Workshop on PG Degree Course for PG Guides organised by Central Council of Homoeopathy at New Delhi on 18th and 19th April, 2005. |
| 52. | Conducted Workshop on 6th & 7th August 2005 at C.N. Kothari Homoeopathic Medical College & Research Centre, Vyara, Gujarat. |
| 53. | "*History of Medicine*" at All India Teachers' Conference & P.G. Seminar at Kolkata on 14th November 2005. |
| 54. | Conducted two day PG Workshop at Dr. M. L. Dhawale Memorial Homoeopathic Institute on 19th and 20th November 2005. (TOPIC) |
| 55. | "*Role of Homoeopathy in Endocrinal Disorders*" at Homoeopathic National Conference at Belgaum, Karnataka on 7th and 8th January 2006. |
| 56. | "*History of Medicine and Homoeopathy*" at Seminar for PG Students in D.K.M.M. Homoeopathic Medical College, Aurangabad on 4th and 6th February 2006. |

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| 57. | *"Treatment of Hormonal Diseases with Importance of Individualisation"* at St. Dr. Brijkishore Homoeopathic Medical College and Hospital, Faizabad on 25th & 26th February 2006. |
| 58. | *"Case Taking in Homoeopathy"* at State Homoeopathic Scientific Seminar 2006 organised by The Homoeopathic Medical Association of India, Azamgarh on 5th March 2006. |
| 59. | *"AIDS and Cancer"* at Birbhum Homoeopathic Practitioners Conference at Suri, West Bengal on 26th March 2006. |
| 60. | *"Organon of Medicine is Required for Successful Homoeopathic Practice"* at Two days Homoeopathic Scientific Seminar organised by Homoeopathic Health Organisation of Assam at District Library (Nagaon), Assam on 18th April 2006. |
| 61. | Attended Workshop Organised by Central Council of Homoeopathy for Inspectors/ Visitor at Dr. A. C. Homoeopathic Medical College, Bhubaneshwar, Orissa on 21st July 2006. |
| 62. | *"Nosodes with Special Emphasis on Carcinosin"* organised by Homoeopathic Bijnan Parishad, Kolkata on 8th October 2006. |
| 63. | *"Keynote Method of Prescription"* at XV All India Homoeopathic Congress, Aurangabad, 2006 on 23rd December 2006. |
| 64. | *"History of Homoeopathic Medicine"* at ROTP in the subject of Organon of Medicine at Midnapore Homoeopathic Medical College and Hospital on 8th March 2007. |
| 65. | *"Where does Homoeopathy Stand in 2007"* in one day Homoeopathic Conference-2007 on 23rd March 2007 at Hyatt Regency, Salt Lake, Kolkata. |
| 66. | *"Man in Health"* for PG Students at D.N. De Homoeopathic Medical College & Hospital on 17th & 24th September 2007. |
| 67. | *"History of Medicine, Biographical History of Homoeopathy"* at ROTP on Module I, in the Subject of Organon of Medicine at National Institute of Homoeopathy on 19th February, 2008. |
| 68. | *"Pseudo Chronic Diseases"* AT ROTP on Module II on Case taking and Homoeopathic Repertory organised by J.S.P.S. Govt. Homoeo Medical College, Ramanthapur, Hyderabad on 28th February 2008. |

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| 69. | *"Lactational Disorders and Its Homoeopathic Management"* at State Campaign on Homoeopathy for Mother and Child organised by Directorate of Indian Medicine and Homoeopathy, Government of Tamil Nadu and The Department of AYUSH at Anna Institute of Management, Chennai on 10th and 11th October 2008. |
| 70. | *"Scope, Limitations, Opportunities, Threats: A comparative study of Systems of Medicines"* in 21st Century in ROTP at Dr. M.L. Dhawale Memorial Homoeopathic Institute, Mumbai on 13th October 2008. |
| 71. | Attended Second Workshop on Research Methodology for Teachers of M.D. (Hom.) Course at Central Council of Homoeopathy, New Delhi on 25th November, 2008. |
| 72. | PG Seminar organized by The Homoeopathic Medical Association of India, Lucknow on 25th December 2008. |
| 73. | 16th All India Homoeopathic Congress, Lucknow 2008 organized by The Homoeopathic Medical Association of India, Lucknow on 28th December 2008. |
| 74. | *"Relation of Pharmacy with Organon of Medicine"* at ROTP on Module I & III, in the Subject of Pharmacy at National Institute of Homoeopathy on 4th February, 2009. |
| 75. | *"Organon of Medicine: After Passing Out"* at seminar cum Workshop organised by Mohaddipur Unit of HMAI, Gorakhpur, UP on 19th April 2009. |
| 76. | *"To Demonstrate The Value Of Study Of Literature For Teachers, Students And Practitioners Of Homoeopathy: Editions Of Organon Of Medicine"* - At ROTP, Dr. ML Dhawale Memorial Homoeopathic Institute, Maharashtra on 4th to 9th May 2009. |
| 77. | *"Lactational Disorder In Mothers"* at National Campaign on Homoeopathy for Mother and Child Care organised by AYUSH Wing Department of Health & Family Welfare, Govt. Of Nagaland, at Kohima 13th and 14th Oct 2009. |
| 78. | *"PG Dissertation"* Kent Memorial Lecture Series organised by Mahesh Bhattacharya Homoeopathic Medical College & Hospital at Howrah, on 23rd November, 2009. |
| 79. | *"Case Taking"* at Homoeopathic Science Congress 2010 organised by Research Institute of Sahni Drug Transmission & Homoeopathy and G.D. Memorial Homoeopathic Medical College & Hospital at Patna on 16th January 2010. |

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| 80. | *"Selection Of Potency"* at Workshop organised by State Sri Durga Homoeo Medical College and Hospital at Azamgarh, UP on 23rd and 24th January 2010. |
| 81. | *"Suicide And Homoeopathy"* at International Seminar on Recent Advances on Homoeopathy, organised by National Institute of Homoeopathy, Kolkata at Swabhumi, Kolkata on 19th to 21st February 2010. |
| 82. | *"Homoeopathy In Day To Day Practice"* at Scientific Seminar organised by HMAI Varanasi at Varanasi, UP on 11th April 2010. |
| 83. | *"Upper Respiratory Tract Infection"* at CME organised by Central Council for Research in Homoeopathy (CCRH), Agartala Unit, Tripura on 17th September 2010. |
| 84. | All India Scientific Seminar 'Homoecon-2011' organised by The Homoeopathic Medical Association of India at Scientific Convention Centre, KGMC, Lucknow on 13th February 2011. |
| 85. | *"Shadows Of Remedy"* at Sai Ram Homoeo Smart Info 2011 organised by Sai Ram Homoeopathic Medical College And Research Centre, at Chennai, on 26th and 27th March 2011. |
| 86. | *"Keynotes Methods of Prescription"* at CME Programme organised by Basil Lifecare at Mumbai on 7th May 2011. |
| 87. | *"Emphasis In Teaching Hahnemannian Concept With Regard To Surgical Diseases Such As Obstacles To Cure, One Sided Disease"* ROTP in Surgery- Module-I organised by RVS Homoeopathic Medical College and Hospital at Coimbatore, Tamil Nadu on 4th July 2011. |
| 88. | *"Surgery In Relation To Organon Of Medicine And Homoeopathy Philosophy"* at CME for Teachers in Surgery Module-I organised by JSPS Govt. Homoeopathic Medical College at Hyderabad on 17th September 2011. |
| 89. | *"Keynotes Methods Of Prescription"* at 66th World Congress of LHMI "LIGA-2011" organised by LMHI at New Delhi on 1st to 4th December 2011. |
| 90. | *"Case-Taking"* at Dr. D.P.Rastogi Memorial Scientific Seminar 2011, organised by HMAI, at Azamgarh, UP on 15th December 2011. |
| 91. | *"Key Note Method Of Prescription – A Practical Demonstration"* at Bihar State Homoeopathic Congress 2012 organised by HMAI, Bihar State Branch at Bodhgaya, Bihar on 10th and 11th April 2012. |

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| 92. | *"Homoeopathic Case- Taking"* at National Conference organised by Homoeopathic Medical Students Association of India at Noida on 21st and 22nd April 2012. . |
| 93. | At a CME workshop organised by Dept. Of AYUSH, Gov t of Jharkhand, on 25th March 2012. |
| 94. | *"Keynote Prescription"* at Homoeopathic Scientific Seminar organised by Homoeo Express (Homoeopathic Newspaper) at Indore on 8th July 2012. |
| 95. | *"History Of Medicine"* at All India Homoeopathic PG Seminar organised by D.N. De Homoeopathic Medical College & Hospital, Govt. of West Bengal at Kolkata on 12 February 2013. |
| 96. | *"Purpose Of Comprehending Organon Of Medicine In UG And PG Curriculum"* in the Workshop on Organon of Medicine and Homoeopathic Philosophy organised by Central Council of Homoeopathy at New Delhi on 27th February 2013. |
| 97. | *"Role of AYUSH in NRHM"* at a Seminar organised by Government of Jharkhand at Ranchi on 20th April 2013. |
| 98. | *"How To Teach Organon Of Medicine And Homoeopathic Philosophy"* at CME, Module-II of Organon of Medicine organised by Dr. A.R. Govt. Homoeo Medical College, Rajahmundry, Andhra Pradesh on 3rd July 2013. |
| 99. | Resource Person & Chairman in *"Mother And Child Care"* at CME (TOT workshop) of Dept of AUSH, Govt of India and CCRH organised by Govt Homoeopathic Medical College, Godda, Jharkhand on 22nd July 2013. |
| 100. | *"Integrating Teaching Of Materia Medica With Organon Of Medicine"* at Workshop on Materia Medica organised by Central Council of Homoeopathy at J.R.N. Rajashtan Vidyapeeth, Jaipur on 25th March 2014. |
| 101. | *"Thyroid Disorders"* at Seminar at Sarada Krishna Homoeopathic Medical College, Kanya Kumari, Tamil Nadu on 25th May 2014. |
| 102. | *"Integrating Teaching Of Materia Medica With Organon Of Medicine"* at Workshop on Materia Medica for teachers of Materia Medica organised by Central Council of Homoeopathy at S.K. Homoeo Medical College and Hospital, Goa on 15th June 2014. |

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| 103. | *"Evaluation Of Symptoms During First Prescription And Second Prescription"* at CME for Teachers of Organon of Medicine, Module-4 of Organon of Medicine organised by Shree Shamaljee Homoeo Medical College and Hospital, Godhra, Gujarat on 3rd July 2014. |
| 104. | *"Secale Cor – A Study In New Perspective"* at 2nd All Bengal Homoeopathic Post Graduate Seminar 2014 at D.N. De Homoeopathic Medical College and Hospital, Kolkata on 12th September 2014. |
| 105. | *"Limitation Of Homoeopathic Practitioners In Following Code Of Conduct Regulation"* at National Seminar organised by Central Council of Homoeopathy and Ministry of AYUSH, Govt of India at Siri Fort Auditorium, New Delhi on 9th January 2015. |
| 106. | *"Integrating Teaching Of Materia Medica With Organon Of Medicine"* at Workshop on Materia Medica for teachers of Materia Medica organised by Central Council of Homoeopathy at Athurasraman N.S.S. Homoeo Medical College and Hospital, Kottayam, Kerala on 22nd January 2015. |
| 107. | *"Case Taking"* at Homoeopathic Science Congress 2015 at Patna, Bihar on 31st January 2015. |
| 108. | *"Understanding Scope And Limitation Of Surgery Through Organon Of Medicine"* at Workshop on Surgery and Homoeopathy organised by Central Council of Homoeopathy at CCH Auditorium, New Delhi on 21st May 2015. |
| 109. | Keynote Speaker at 2nd Annual Health Care Expansion Summit North Eastern Region at Guwahati, Assam on 3rd and 4th September 2015. |
| 110. | On *"Learning To Prescribe Key Notes"* at One day Workshop at C.D. Pacchigar College of Homoeopathic Medicine and Hospital, Surat, Gujarat on 6th October 2015. |
| 111. | *"Relationship Of Physiology With Homoeopathic Philosophy, Materia Medica, Repertory, Pathology And Clinical Discipline"* at CME for teachers at State L.B.S. Homoeopathic Medical College, Allahabad, U.P. on 5th November 2015. |
| 112. | *"Relationship Between Materia Medica And Repertory"* at CME for teachers at State L.B.S. Homoeopathic Medical College, Allahabad, U.P. on 5th December 2015. |
| 113. | *"What After A Correct Prescription?"* at 3rd All Bengal Homoeopathic Post Graduate Seminar 2015 at D.N. De Homoeopathic Medical College and Hospital, Kolkata on 19th December 2015. |

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| 114. | *"Framing Different Types Of Totality; Diet And Regimen In Management Of Cases; Obstacles To Cure"* at CME for teachers at Solan Homoeopathic Medical College and Hospital, H.P. on 24 December 2015. |
| 115. | *"Limitation Of Homoeopathic Practitioners In Following Code Of Conduct Regulation"* at National Seminar on Homoeopathy 2016 organised by Central Council of Homoeopathy under the aegis of Ministry of AYUSH, Government of India, New Delhi at Siri Fort Auditorium, New Delhi on 8th to 10th January 2016. |
| 116. | *"State Of Homoeopathic Education"* at 19th All India Homoeopathic Scientific Seminar 2015, Nagpur organised by The Homoeopathic Medical Association of India Maharashtra State Branch at Vasantrao Deshpande Sabhagriha, Civil line, Nagpur, Maharashtra on 16th & 17th January 2016. |
| 117. | *"Role Of Pathological Investigation In Homoeopathic Prescription"* at International Homoeopathic Conference at Indore, M.P. on 7th March 2016. |
| 118. | *"Anamnesis"* at CME, Sponsored by Ministry of AYUSH, Govt. Of India held at Govt. Pt. Jawaharlal Nehru Homoeopathic Medical College & Hospital, Kanpur on 29th November 2016. |
| 119. | *"Homoeopathy and Diagnosis"* on 11.02.2017 at National Seminar on Diagnosis organised by Central University of Tibetan Studies, Sarnath, Varanasi. |
| 120. | *"Evaluation of Symptoms"* & *"Secale Cor."* at CME for Medical Officers organised by Arunachal Pradesh AYUSH Society at Naharlagun, Arunachal Pradesh on 24th March 2017. |
| 121. | *"Respiratory Disorder and Homoeopathy"* at Scientific Seminar organised by Uttar Pradesh State AYUSH Society at Varanasi, UP on 9th April 2018. |
| 122. | Chairman for the Scientific Session on *"MOU at Hom. Medical College with speciality Hospitals for practical training of UG student is relevant"* organised by The Homoeopathic Medical Association of India, West Bengal State Branch at Kolkata on 1oth April 2018 |
| 123. | 3-days Programme on Implementation of NABH Standards for Homoeopathic Hospital at National Institute of Homoeopathy, Kolkata from 09.05.2018 to 11.05.2018 |
| 124. | Resource Person on *"Pharmacovigillance and Homoeopathy"* at one day MCE on Pharmacovigillance in Homoeopathy at National Institute of Homoeopathy on 20th September 2018. |

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| 125. | *"Nurturing a Child's Mental Health"* at *8th Body, Mind and Life Conference at Dharamshala on 1st October 2018* |
| 126. | *'Life Style Disorder'* at All India Seminar at Rajasthan Vidyapeeth Homoeopathic Medical College, Udaipur, Rajasthan on 26.10.2018 |
| 127. | *'Coronary Arterial Disease and Osteo-Arthiritis'* at National Homoeopathic Seminar at Rourkela, Odisha on 09.03.2019 |
| 128. | *'Diabetes Mellitus'* at Homoeopathic Seminar and Hahnemann's Birthday celebration at The Medical Association of India, Lakhisarai, Bihar on 17.03.2019 |
| 129. | *'Life Journey of Hahnemann* at Homoeopathic Conference off State AYUSH Society, Govt of Manipur on 10.04.2019 |
| 130. | 'Degenerative Diseases' at Homoeopathic Seminar and Hahnemann's Birthday celebration at The Medical Association of India, Hajipur, Bihar on 14.04.2019 |
| 131. | *'Insomnia'* at Scientific Seminar & Hahnemann Birthday Celebration organised by AYUSH Medical Association, Patna, Bihar on 30.04.2019 |