

Funding Agency: **Ministry of AYUSH**

Title of the Project: **Evidence based support for efficacy of homeopathic remedy, "Nux vomica" through pharmacological studies and elucidation of its mechanism of action using Gene Expression Profiling (Completed)**

Principal Investigator: Dr. A.K. Bhatia

Co-investigator: Dr. Aditya Saxena

Co-investigator: Dr. Anjana Goel

Project Cost- 6, 77,250/-

Project Duration- 2 ½ Years

Abstract-

Homoeopathic remedies have gained wide acceptance among masses, still their mode of action is inexplicable to scientific community hampering their adoption as mainstream medicines. Present study was conducted to elucidate mode of action of a homoeopathic medicine on strychnine-induced seizures; besides pharmacological experiment, Illumina-based Next Generation Sequencing (NGS) transcriptome profiling was also carried out.

Three groups of mice were subjected to experimental epilepsy induced by strychnine (i.p.); one group received standard therapeutics diazepam, and another homeopathic medicine Nux vomica. Time of onset of seizure, and time until death/survival were recorded; Nux vomica has been reported to statistically prolong these durations and survival was reported in comparison of control. Tissues from lower-brain stem were extracted as per indication for site of action of Nux vomica; mRNA was isolated and converted to cDNA and ligated with adaptors. Transcriptome sequencing was carried out using Illumina-based Next Generation Sequencing (NGS), a total of 18.98 GB raw sequencing data was generated that was assembled into contigs, and differentially expressed genes were identified. Bioinformatics-based pathway analysis yielded valuable clues about the working of this medicine. Nux vomica had exerted its effect by down-regulating the hyper-activated CNS by the epileptic agent: strychnine. It also inhibited rate of nerve conduction by attenuating Ca⁺²-mediated release of neurotransmitter, block growth-factor, and transcription factor mediated epilepsy-induced rewiring of neuronal structure. It also stimulated innate immune system and prevented lowering of action potential threshold; a feature, that had been considered to give rise altered neuronal structure inducing epilepsy.