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Scientific validation of antiviral potential of a tribal folklore: A drug development initiative

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Herpes simplex viruses (HSV), causing cold sores, keratoconjunctivitis, genital herpes and encephalitis are one of the serious public health concerns. Following entry into the host cells, HSV establishes primary infection and transported to the sensory ganglia for life-long latency. During infection, HSV replicates into immediate-early (IE), early (E) and late (L) phases. In the IE phase it releases a tegument protein VP16 that induce the host cell factors HCF1 and Oct1 to form IE complex. The HCF1 than recruit lysine-specific demethylase-1 (LSD1) on IE complex to activate ICP0 promoter for subsequent expression of E and L genes. The management of herpesvirus diseases by acyclovir and related drugs target viral DNA polymerase with limited efficacy, but their extensive clinical use generates drug-resistant viruses. Till date there is no effective HSV vaccine and thus, drugs with better efficacy are required.

We have isolated an alkaloid 7-methoxy-1-methyl-4,9-dihydro-3H-pyrido[3,4-b]indole (HM-7) from an ethnomedicinal herb Ophiorrhiza nicobarica used by the Shompen tribes of Great Nicobar Islands, with the potent antiviral activity against isolates of HSV-1 and HSV-2. Further, we have demonstrated that HM-7 interfere the recruitment of LSD1 and binding of IE complex on ICP0 promoter, leading to the suppression of IE gene synthesis. Moreover, HM-7 at its nontoxic virucidal concentration significantly reduced the virus yields in brain, skin and vagina of infected Balb/C mice. The interference in IE transcription, a decisive factor for lytic cycle or latency by HM-7 reveals an interesting target for developing non-nucleotide antiherpetic agent with different mode of action than acyclovir. (250 Words).

Biography

D Chattopadhyay has completed his Ph. D from Jadavpur University and postdoctoral studies from London University. Presently he is the Deputy Director of ICMR Virus Unit, Kolkata. He has validated the scientific basis of ethnomedicinal practices of several Indian Tribes, and published 80+ papers in reputed peer reviewed journals including 5 books, 10 book chapters and 5 patents. He is serving in the editorial board of three reputed Journals, and is the Fellow of the British Society for Antimicrobial Chemotherapy. He serves as the Examiner, visiting Faculty and Ph.D. Guide of several Indian University and received some prestigious awards. (100 words).

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