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Chowdhury Alfi Afroze
Department of Biotechnology &
Genetic Engineering, University
of Development Alternative,
Lalmatia, Dhaka, Bangladesh

Taufiq Rahman
Department of Pharmacology,
University of Cambridge, Tennis
Court Road, CB2 1PD,
Cambridge, England

Rownak Jahan
Department of Biotechnology &
Genetic Engineering, University
of Development Alternative,
Lalmatia, Dhaka, Bangladesh

Mohammed Rahmatullah
Department of Pharmacy,
University of Development
Alternative, Lalmatia, Dhaka,
Bangladesh

Correspondence
Mohammed Rahmatullah
Department of Pharmacy,
University of Development
Alternative, Lalmatia, Dhaka,
Bangladesh

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Evaluation of a folk medicinal cure for stroke-induced paralysis and pain

Chowdhury Alfi Afroze, Taufiq Rahman, Rownak Jahan and Mohammed Rahmatullah

Abstract

Pain and paralysis are two symptoms that can happen following a stroke leading to loss of movement, intense discomfort and loss of normal mode of living. These conditions can last from months to years and even till death whenever it may be. We describe here the formulation of a folk medicinal practitioner who treats stroke-induced pain and paralysis. Several patients who have undergone the treatment reported almost complete to complete recovery. Essentially the formulation consists of juice of leaves or fruits of *Datura metel* L. (Solanaceae) mixed with lime water and kerosene, which is topically applied several times daily on the paralyzed and painful areas. Cure was observed to be effected within a period of two to three months. A critical evaluation is conducted on the possible scientific efficacy of the formulation.

Keywords: folk medicine, stroke, paralysis, pain, Bangladesh

Introduction

According to the American Heart Association and American Stroke Association, “a stroke occurs when a blood vessel that carries oxygen and nutrients to the brain either bursts, ruptures or is blocked by a clot”^[1], resulting in death of pieces of the brain. After a stroke, around 30% of the survivors experience pain among which can be spasticity and contracture, shoulder pain or headaches^[2]. Stroke can cause hemiplegia (paralysis on one side of the body caused by brain damage, or hemiparesis (weakness or partial paralysis on one side of the body caused by brain damage)^[3]. Pain and paralysis can be serious debilitating conditions requiring long-term treatment (paralysis may also be permanent), which may not be both available and affordable to the vast majority of the people of developing countries like Bangladesh.

Folk medicinal practices have been in existence in Bangladesh from time immemorial. Anecdotal evidence indicates that while most of the literate city dwellers dismiss folk medicinal practitioners (FMPs) and their practices as ‘not scientific’ or ‘lacking validity’, yet it is true that when modern allopathic medicine fails such people either visit FMPs or religious healers. Among villagers and the urban poor, FMPs are regarded as another form of traditional medicinal practitioners like Ayurveda or Unani system practitioners. In our various surveys among folk and tribal medicinal practitioners of Bangladesh (The main difference between the two groups is that FMPs practice among the mainstream population, while tribal practitioners practice among their individual tribes)^[4-21], We have observed that the FMPs treat a whole gamut of diseases using mostly plant-based medicines, and a number of these diseases are untreatable with allopathic medications.

The objective of the present study was to document the treatment formulation of a FMP who claimed to be able to cure stroke-induced pain and paralysis and to evaluate any scientific efficacy of the FMP’s formulation. Stroke is the third leading cause of death and serious long-term disability in USA with around 800,000 people suffering strokes every year. Stroke is also the third leading cause of death in Bangladesh^[22]. As such, it is necessary to explore all possibilities to mitigate the physical and financial consequences of stroke.

Materials and Methods

The survey was conducted over a period of three years from 2015 till 2017. The FMP interviewed and documented in the present study was Ms. JF, age 45 years, residing in Dhaka City and practicing for the last 20 years. She is a housewife and practices folk medicine on an irregular basis with few formulations and a limited number of diseases treated. Her patients are

few. They come to her on here say and she does not charge any fees from her patients. She obtained the present and several other formulations from a FMP in her home village, namely Laxmipur village in Thakurgaon district, Bangladesh, when she was around 25 years old.

Prior Informed Consent was first obtained from the FMP. She was thoroughly apprised as to the nature of our visit and consent obtained to disseminate any information including her name both nationally and internationally. Actual interviews were conducted in the Bengali language, which was spoken fluently by the FMP as well as the interviewers. Although the formulation used for treatment was obtained on the very first day of our visit, several of her patients were observed and their treatment results obtained over a period of three years.

Results and Discussion

The formulation that the FMP used consisted of taking juice from crushed leaves or fruits of *Datura metel* L. (Solanaceae) (Fig 1), which was mixed with 1/4th volume of lime water (diluted solution of calcium hydroxide) and enough kerosene (paraffin oil) to make the resultant mixture somewhat viscous. The mixture was massaged on the paralyzed or painful area 4-5 times daily till cure. The patients reported cure usually within 2-3 months.

The use of lime water (which would release alkaloids) from leaf or fruit juice suggests that alkaloids may be the responsible components of the plant responsible for mitigating paralysis or pain. Important alkaloids reported from leaves include atropine, hyoscyamine, fastusine, littorine and scopolamine; beta-sitosterol, daturanolone and daturadiol have been quoted as present in fruits [23].

After a stroke, it's common to experience weakness or paralysis (hemiplegia) on one side of the body, depending on which side of the brain the stroke has occurred. Right-sided weakness or paralysis is caused by an injury to the left side of the brain, where the areas that handle language and memory are. Left-sided weakness or paralysis is caused by an injury to the right side of the brain, which contains the areas that control facial recognition

and nonverbal behavior. Stroke-induced hemiplegia is often accompanied by muscle atrophy, seizures and pain. Some of the antimuscarinic drugs (for example, darifenacin, solifenacin etc.) are used to reduce urinary frequency by antagonising muscarinic receptors at the detrusor muscle as this greatly helps paralyzed patient.

This could reflect a potential benefit that *Datura metel* leaves or fruit juice that is enriched in atropine can offer [24].

Atropine and hyoscine (the latter derived from hyoscyamine) have been long known to have amnesic properties [25], and so could be excellent analgesic agents [26]. Atropine is also used to treat bradycardia or abnormally slow heart rate. The ethnomedicinal uses of kerosene as a topical agent (perhaps to facilitate skin absorption of phytochemicals) have been reported for the Santals of Keonjhar district, Orissa, India [27]. Kerosene is also used with pepper, onion and mustard oil topically to assuage rheumatism/arthritis by Bhilla tribe of Maharashtra, India [28]. Kerosene and mustard oil are used by the Bede community in Bangladesh for massaging and alleviating pain [29]. The Pankho community of Rangamati district, Bangladesh also applies topically a mixture of crushed *Cassia alata* leaves with kerosene to treat skin disorders [30].



Fig 1: *Datura metel*

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