

# Use of *Jasminum Sambac* and *Eleusine Indica* in a Novel Method for Treatment of Snakebite

**Rashed Reza, Md Hosen S and Rahmatullah M\***

Department of Pharmacy, University of Development Alternative, Bangladesh

**\*Corresponding author:** Professor Mohammed Rahmatullah, Department of Biotechnology & Genetic Engineering and Dean, Faculty of Life Sciences, University of Development Alternative, Lalmatia, Dhaka-1207, Bangladesh, Tel: +88-01715032621; Fax: +88-02-8157339; Email: rahamatm@hotmail.com

## Research Article

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## Abstract

**Objectives:** The objective of the present study was to document a novel treatment method using *Jasminum sambac* and *Eleusine indica* to treat snakebite in Bagshayesta village of Rajshahi district, Bangladesh.

**Methods:** The whole process of treatment was photographed in presence of a few onlookers (including another FMP) with the consent of the patient and the folk medicinal practitioner (FMP) who treated the patient. Plant specimens were photographed, collected and identified at the Bangladesh National Herbarium at Dhaka.

**Results:** The FMP (belonging to the Libra zodiac sign) first used a rectangular ring of *Eleusine indica* leaves and stems to determine the extent to which venom has entered the body of the patient (who was bitten on the right toe by a cobra species snake). Leaf juice obtained from seven leaves of *Jasminum sambac* was then orally administered to the patient every 5-10 minutes till the venom has come out of the bitten area.

**Conclusion:** The whole treatment process, strange as it seems, was witnessed by onlookers as well as the authors (all of whom can be judged to be without bias one way or another). That the patient survived without administration of any anti-venom or other medication(s) testify to the success of the treatment, at least for cobra bites.

**Keywords:** Folk medicine, snakebite, *Jasminum sambac*, *Eleusine indica*, Bangladesh

## Introduction

Snakebites are common in Bangladesh among the rural folks, and it has been hypothesized that the incidences of snakebite in Bangladesh may be similar to that of Nepal with 1162 snakebites including 604 envenoming bites and 162 deaths per 100,000 people [1].

Among the venomous snakes, at least 40-50 species are known to be present in the country, belonging to the Elapidae and Viperidae families. The terrestrial elapid snakes include two species of cobra (*Naja naja* or spectacled cobra and *Naja kaouthia* or monocled cobra), at least five different species of krait (*Bungarus*) and the King Cobra (*Ophiophagus hannah*). *Naja kaouthia*

(Bengali: keute) bites are possibly the most common in Bangladesh (because very few snake bites are reported) and results in neurotoxicity and local swelling, the latter often leading to soft tissue necrosis [2, 3].

Poorer rural population suffers most from snakebites. Because of poverty, they are not able to buy and wear foot gear. Moreover, their work constitutes agricultural work in the fields, cleaning poultry yards, and fishing. Most bites occur in the rainy season between May and October with most bites in June. This is because rain water causes puddles to form on muddy rural roads causing a snake difficult to see leading to stepping on the snake and getting bitten in the process. Also rain water and accompanying flood water submerges large areas of land leading to snakes seeking warm shelter within the rural homesteads. As such, snakebites most often occur in the lower and upper limbs (below the ankles being the occasional spot for bites) [4].

Bangladesh has around 86,000 villages. These villages lack modern medical amenities including allopathic practitioners. Anti-venom or other medications for snakebites are unknown entities to the rural people. As a result, the rural people rely on folk medicinal practitioners for treatment, who in turn depend on various medicinal plants for neutralizing snake venoms [5-10]. It is quite possible that in a number of cases, the snakebite has been caused by non-venomous snakes or even if by venomous snakes, the toxin has not entered the body, thus giving rise to a false impression of the effectiveness of a given medicinal plant in neutralizing snake venom. However, in Bangladesh, successful and accomplished practitioners of snakebite treatment are known as 'ojhas' and they command a lot of respect among the people. It is also a fact the anti-snake venom properties of some medicinal plants have been scientifically validated [11].

During an ethnomedicinal survey tour amongst the FMPs of various villages in Bagha sub-district of Rajshahi district, Bangladesh, one of the authors (RR) virtually stumbled upon a novel way of treating snakebites done by an 'ojha' at Bagshayesta village of Bagha sub-district in Rajshahi district, Bangladesh. Because of the favorable circumstances of the author being present at the village where the snakebite occurred and that the author had his camera along with for photographing medicinal plants, the whole treatment process could be photographed by the author. Another author (MSH) was in an adjacent village and arrived on the scene within thirty minutes and so the treatment process was witnessed by two of the

authors along with another FMP and some villagers, who were present as curious spectators.

## Methods

The 'ojha' who treated the snake bitten patient was named Kaccu Islam, male and about 46 years in age. The birth date of the 'ojha' fell under the Libra zodiac sign (Bengali: Tula rasi, rasi being the Bengali of zodiac and tula being the Bengali equivalent of Libra), that is the birth date fell between September 23 and October 22. It is to be noted here that in Bangladesh, Libra people are considered to be very auspicious, being endowed with extraordinary spiritual powers, and being able to act as a medium between the spirit world and human beings. The task of the 'ojha' was to ascertain to what extent the venom has gone into the body and to bring it down. The actual formulation for neutralizing or 'bringing down the venom' was prepared by the other FMP, named Qader Ali, male and 64 years by age. The victim was another male named Shohidul Islam and 34 years in age. The victim was bitten by a *Naja kaouthia* on his right toe while going to the fields for cultivation in the morning (around 7 am).

Since the incident was sudden, prior informed consent (before the incident took place) could not be obtained. However, prior to initiation of the treatment process, informed consent was obtained from the 'ojha', FMP, and the patient to photograph the whole treatment process and to disseminate their names, pictures, and any other information obtained both nationally and internationally. The two plants used in the treatment were shown by the FMP. The plants were photographed, local names obtained from the FMP, and voucher specimens collected and deposited with the Bangladesh National Herbarium at Dhaka for identification and procurement of accession numbers.

## Results and Discussion

The two plants used in the treatment process were identified at the Bangladesh National Herbarium as *Jasminum sambac* (L.) Aiton, Oleaceae family (local name: beli) and *Eleusine indica* (L.) Gaertn., Poaceae family (local name: kasla ghas). Their accession numbers were 45325 and 45314, respectively. Following being bitten, the victim raised a hue and cry, which brought forth some of his fellow villagers to the scene. Such snakebite incidents are not foreign to the villagers, *Naja kaouthia* being very much common within the village area. The victim mentioned that he has been bitten on his right toe by a *Naja kaouthia* snake. The villagers procured a rope and

tied a tourniquet above the victim's right knee on his right thigh (Figure 1). In the meantime, three persons were also sent to inform the 'ojha', FMP and one of the authors (RR), the villagers knowing beforehand that we were there for ethnomedicinal surveys. RR then sent another villager to summon another author (MSH). The 'ojha' and the FMP then procured the plant *Eleusine indica* and seven leaves of *Jasminum sambac* (Figures 2 & 3, respectively). The leaves of *Jasminum sambac* were crushed on a 'shil pata' (consists of a flat piece of stone and another cylindrical grinding stone, can be seen in Figure 4) to obtain juice from the leaves (Figure 4). The stems and leaves of *Eleusine indica* were tied to make a ring, which the 'ojha' wore around the three middle fingers of his left hand (Figure 5). *Eleusine indica*, according to the 'ojha' served as a 'tester plant' to determine how far the venom has gone upwards within the body (since the toe was bitten). The 'ojha' then put his hand wearing the ring on a 5 X 5 inch rectangular shape drawn on the ground (Figure 5).



**Figure 1:** Victim bitten on his right toe (circled) and a tourniquet tied up on his right thigh (arrow).



**Figure 2:** *Eleusine indica* (whole plant).



**Figure 3:** Seven leaves of *Jasminum sambac*.



**Figure 4:** Leaf juice of *Jasminum sambac* (in bowl), bowl is upon a 'shil pata'.



**Figure 5:** The 'ojha' wearing the ring with his hand on a rectangle drawn on the ground (arrow).

The snake-bitten person was next brought closer to the 'ojha'. Almost immediately, the hand of the 'ojha' wearing the ring, according to the 'ojha', started moving towards the bitten person by itself without any prompting from the 'ojha' (Figures 6 & 7).



**Figure 6:** Hand of the 'ojha' moving towards the bitten person (not seen in the picture).



**Figure 7:** Hand of the 'ojha' near the bitten toe of the snake-bitten person.



**Figure 8:** The 'ojhas' hand rising upwards.



**Figure 9:** The 'ojhas' hand now nearing the knee of the bitten person.



**Figure 10:** The 'ojhas' hand now at the place of the tourniquet following snakebite.

Figures 8-10 show the 'ojhas' hand moving progressively up the bitten person's knee till it reached the point where the tourniquet was present. As per the 'ojha', the venom has stopped there and was not able to rise further because of the tourniquet.

The 'ojha' claimed that his hand would not rise above the tourniquet of the snake-bitten person's thigh. So according to him, the venom has reached up to that point. One thing to be mentioned here is that between the actual snake bite and the tying of the rope, the elapsed time was around 10-15 minutes. The arrival of the 'ojha' and the FMP on the scene, collection and preparation of the leaf juice and the ring, and 'divination' of the place to which the venom has risen did not take more than 45 minutes. Also to be noted is that these are approximate times but not too different either way from the actual.



**Figure 11:** Oral administration of *Jasminum sambac* leaf juice to the snake-bitten person.

The patient was now orally administered leaf juice of *Jasminum sambac* (Figure 11). The process was repeated

every 5-10 minutes for three times, and each time following oral taking of leaf juice, the 'ojha' checked the position of the venom (Figure 12). The venom, according to the 'ojha' came down with the last administration and came out through the bitten area (Figure 13, please note that the 'ojhas' hand is now outside the snake-bitten person's body).



**Figure 12:** Venom coming down after administration of leaf juice (note position of 'ojhas' hand).



**Figure 13:** Venom is now completely out of the body of the snake-bitten person.

The obvious question that arises is whether such treatment method(s) are hoaxes or not. However, it is to be remembered that the person survived the biting of a very venomous snake, *Naja kaouthia*, which is dreaded all throughout Bangladesh for its deadly venom and proclivity to bite. Also to be noted is that 'ojhas' are known throughout both India and Bangladesh, and are known precisely for their ability to neutralize or 'take out' the snake venom through use of 'mantras' (incantations) and medicinal plants [12-14]. It is possible that the 'testing' method of the 'ojha' as to the position of the venom could be a hoax, a psychological trick played on the patient and onlookers after first visually determining the physical state of the patient. But that the patient survived can be either the venom has not entered the

bitten person's body or *Jasminum sambac* leaves have venom neutralizing properties. It is to be noted that *Jasminum sambac* is considered an effective plant for treating snake bites [15]. To conclude, the plant merits potential for further scientific studies as to its anti-snake venom activity.

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