

# The answer to snake bites

A NUMBER of people in the rural areas of Bankura and Burdwan have died recently on account of snake bites. From a report in *The Statesman*, we have come to know that the victims died owing to lack of anti-venom serum (AVS), auxiliary equipment required for treatment and the absence of qualified doctors. The incidence of snake bites in summer in West Bengal is not new. But negligence on the part of hospitals and the medical administration in the treatment of victims is unpardonable.

College teachers and forest officials feel that climate changes in the regions compel snakes to emerge from their hideouts. We wish to know what changes in the climate forced snakes to behave violently. A zoologist in Burdwan contends that the excessive use of pesticides in agriculture fields and elsewhere compelled field rats to leave their habitat and take shelter in and around residential areas. The excessive use of pesticides has been in vogue since the 1960s. Secondly, rats are not the only prey of snakes. Small mammals, birds and their eggs and even fish satisfy the taste of snakes. So the present contention of the learned zoologist can't be carried on too far.

Snakes have become the most successful animals in the reptile group to conquer habitats like the desert, the fresh water environment, dense forests and swampy regions. Some species have survived by snatching bats in the air.

Snakes regulate their body temperature by moving from place to place. Actually they function within a narrow temperature and seek an environment with proper temperature. Since snakes capture prey in darkness as well as in light, it is apparent that heat plays a crucial part. The snake has a strike reflex triggered by the firing of heat receptors whereas another set of sensory inputs determines whether the snake would swallow the object or not.

The body temperature of snakes changes with the change in the ambient temperature. Snakes feel comfortable between 30 degree C to 32 degree C in sub-tropical regions. During the winter months, they go into hibernation (winter sleep). However, they come out when they feel hungry. During the period of hibernation their metabolic rates goes down appreciably, and so they become unmovable. One may have seen snakes lying on the

road, in gardens, near bushes and around residential localities. They even fail to defend themselves by biting. In summer, they become, uncomfortable, come out in open, riggle here and there, either looking for prey or may take shelter in comparatively cool places.

During rain the habitat of snakes get dampened and so they leave their habitats to find out comfortable places with an appropriate temperature. In the process, snakes may intrude into residential localities, hide inside the building and try to take shelter in dark places - a cattle shed, kitchen, available crevices and such place. While moving here and there, the snake

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1 Cobra	2 Krait	3 Branded Krait	4 Russel Viper	5 King Cobra
Keutha & Gokhura	Kalaj	Sankha mathi	Chandrabora	Sankha chur
This species is the denizen of dense forest, rarely seen, so very, very few incidence of bite is recorded				

Nature of venom	Fatal dose	Average time to succumb
1 Cobra - Neutroxin	15mg	around 8 hours
2 Kalaj - Neutroxin	1mg	nearly 13 hours
3 Branded Krait - Neutroxin	10mg	not definitely known rarely bites
4 Russel Viper - Hemato toxin	42mg	72 hrs

may come close to men or cattle, and get nervous. Or venomous snakes like cobras raise their head and swing the hood on both sides of the head in an act of defence. Even then if the intruder fails to leave the place, the agitated cobra strikes in a lightening speed with its fangs (poisonous teeth) as a defensive act. The hollow fangs attached to the poisonous gland then make way for the deadly venom into the body of the victim. The snakes may sometimes strike without displaying their hood. The Russel viper is hoodless. In summer the snakes behave in the same manner as during the rainy season.

The snakes are endowed with a few spectacular organs to scan their environment effectively: (i) Jacobson's organ ~ This tiny hollow oval structure is made up of sensory cells and attached to the olfactory (smell detecting) nerve. They are situated on both sides of the mouth. The snake continuously protrudes and withdraws its tongue. This happens so rapidly that even a close observer fails to understand that what is going on. Actually, by this process the protruding tongue collects air-borne chemicals

(ii) Thermoreceptor or heat sensor ~ In vipers, python and some other snakes, a special type of sense organ called Thermoreceptor or Head Sensor (HS) is situated between the eye and the nostril in vipers and on the jaw in pythons. The heat organ is about five mm deep with a circumference of four mm. With the help of the HS, the viper can perceive the ambient temperature. Even a minute's change in the temperature is detected by HS.

Small mammals and birds, among others, are important food items for vipers and other snakes. With the help of HS, the vipers detect the presence of such prey from a distance of 40 cm within 0.5 seconds.

There are four types of venomous snakes in West Bengal: (i) the cobra with two varieties, the keutha and gokhura; (ii) the krait; (iii) the branded krait; (iv) the Russel viper; (v) the King Cobra which remains in dense forests and is rarely seen and very few bites are recorded.

It is possible to save to victim's life. From the table, it is apparent that enough time becomes available for treatment and one must keep an adequate stock of AVS and other facilities; (ii) facilities for quick movement from the site of the tragedy to the hospital should be made available; (iii) qualified doctors are required for treatment; (v) each panchayat samity should have a snakebite treatment centre, particularly in the rainy and summer months.

Snake bites are a major socio-medical problem yet it is neglected presumably because they affect mainly the poor. During the last few centuries, the AVS developed in 1894 remains the only therapeutic remedy. But AVS has a numbers of shortcomings ~ problem of storage, short supply, side effects etc. So attempts are being made to find an alternative medicine. Work has been going on in Calcutta University in

this direction. In the meantime the scientists of that laboratory have identified several plants. They have proposed a combination therapy for treatment of snakebite victims. We hope the scientists will succeed in their effort to put the "green or herbal" treatment to practice.

We can't prevent snake bites. They are part of our existence. But there are ways and means to protect wild life as well as the human species.

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