

## TERRESTRIAL VENOMOUS ANIMALS OF DURG, CHHATTISGARH AND THEIR POISONING BEHAVIOR

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### ABSTRACT

A number of invertebrates and vertebrates are known to cause dreadful infections and a majority of deaths due to their poisoning behavior. Some animals inflict injury on humans by the action of their sting and venom, some of them being commonly known are spiders, scorpions, ticks, mites, centipedes, bees and wasps. The venom ejected and injected into human blood is usually through the bites, poison claws, stings, saliva and mouth parts of venomous animals. The composition of the venom is highly toxic, and may be cutaneous poisoning or extremely or neurotoxic. The toxic effects of venom often result in oedema, blisters, tremor, paralysis, inflammation, salivation, hemorrhages and death in severe cases. Envenomation, i.e., toxic effects is an occupational hazard for workers involved in agriculture and forestry. The article indicated here reviews the venomous behavior, their effects and prevention, of certain terrestrial venomous animals surveyed in certain areas and fields of Durg and Bhilai (Chhattisgarh).

**KEYWORDS :** Venomous, Toxic, Stings, Bites, Cutaneous poisoning

All the living organisms on this planet are interdependent on each other for their sustenance and survival. At the same time, the principles of struggle for existence, maintains the fact that the living creatures are also dangerous for life to most of the species. This is usually due to the competence for basic needs like food, shelter, reproduction etc. It has consequently, made the animals evolve themselves with defensive mechanisms. Almost all the invertebrates and vertebrates including human beings, have developed their defense systems, that has enabled them to adapt themselves to the changing conditions of environment as well as to the life risks from the harmful attacks of the animals around (Brodie, 1989).

One of the most significant ways of defense in most of the aquatic and terrestrial animals is their 'poisoning behavior'. Their ruthless attacks in self-protection cause dreadful injuries and infections in humans. This happens due to their poisoning

behavior, in which the animals use their bites and stings to inject their poison or venom into the skin or blood of humans. Such animals are called 'Venomous animals', and when inhabit the land or in soil, they are distinguished as 'Terrestrial Venomous Animals'. Some of such animals whose venom action harm the human beings, are spiders, scorpions, centipedes, snakes, tick, mites, mosquitoes, flies, bees and wasps.

The present work deals with the survey of such terrestrial venomous creatures in some of the fields, open grounds and gardens in Durg city of Chhattisgarh, India.

### METHODOLOGY

Some crop fields, pieces of agricultural lands, grounds with wildy growing bushes in some places, and gardens with thick vegetation were selected in the city of Durg and also in its outskirts. The observation of Venomous animals on frequent visits to such places, all around the year from February

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2016 to December 2016, enabled in enlisting some terrestrial venomous animals. The study of their poisoning behavior was made possible through constant observations and some available literature.

## OBSERVATIONS AND RESULTS

Some of the commonly detected and observed 'Terrestrial Venomous Animals' are listed in Table T-1.

### Poisoning behavior of Venomous Creatures

The poisonous bites and stings of some of the observed terrestrial venomous animals, and their inflicted injuries, infection and fatal effects constitute their 'Poisoning behavior'.

### Invertebrates

#### Scorpions

Scorpions are arachnids that possess a sharp poison claw on the end of the abdomen. It inflicts a painful sting. The intensity of the sting depends upon the species, amount of venom injected and the season of hibernation period. The most dangerous species known is *Buthidae*. The venom is neurotropic and highly toxic.

In all cases, intense local signs such as pain and inflammation are produced immediately after the scorpion sting. This is followed by manifestations such as fainting, salivation, sneezing and diarrhea (Jackman, 1999 ; Levi *et al.*, 1990).

#### Spiders

Spiders are also arachnids, all species being quite venomous. Their saliva is also known to be toxic. But only a few types produce injury in humans. Spider poisoning may be cutaneous or neurotoxic.

In cutaneous poisoning, oedema is produced around a cyanotic mark on skin, after a few hours of spider

bite. This is followed by the formation of blister, leading to damage of epidermal cells, and causing local necrosis. Healing may be slow (*lycosa* genus). Some spiders have neurotoxic venom. Tremors, paralysis and fatal shocks are some of the ill-effects of nerve poisoning. Forestry and agricultural workers usually fall prey to such type of poisoning.

#### Centipedes

Centipedes are the Chilopods with poison fangs on the appendages of the first body segment. Centipede venom is toxic, but produces only the localized effect on skin or site of bite. The fang infliction produces painful oedema.

#### Ticks and Mites

Ticks and mites are the blood-sucking arachnids. They bite and inject their saliva through their feeding organs that way exhibit toxic effect. Poisoning is quite dangerous, as it may produce in children, what is known as 'Tick paralysis', accompanied by reflex suppression. If the tick adheres to the scalp for a long time, it may cause 'Bulbar paralysis', often resulting in deaths. Inflammation of the skin is another local bite-symptom of the blood-sucking arachnids.

#### Insects (Bees, Wasps, Flies, Mosquitoes & Caterpillars)

The painful stings of bees and wasps produce extreme inflammation, severe pain and burning sensation. This is followed with the development of erythema, oedema and necrosis. Multiplicity of stings may cause shivering, nausea and chilling symptoms. Stings on the face or the tongue may lead to glottal oedema, and death may occur by asphyxiation.

Mosquitoes, blackflies and sandflies inject venom *via* saliva and mouth-parts through their bites. Red rashes and necrotic lesions are observed, thereafter. Venom of blister flies produce vesicular or skin lesions and toxic nephritis.

The hair and excreta droppings of caterpillars produce allergies and blisters. Their venomous haemolymph is harmful. Also the urticarial or oedematous skin lesions are also caused (Drees & Jackman, 1998).

### **Vertebrates**

#### **Snakes**

Snakebites are considered threatening for the common people. The mere sight of snakes itself is quite fearful for humans. Majority of snake species are non-poisonous, but still give the scary shock. The poisonous species such as Cobra and Viper cause harm with their venomous bites. The dangerous terrestrial snakes belong to Colubridae and Viperidae.

Poisonous snakes have toxic venoms in their poison glands present in their buccal cavity. The biting apparatus possess a pair of poisonous long curved teeth called fangs, through which the venom is injected into human blood. The bite injury may or may not be painful, but the toxicity of venom may harm the muscles and nerves, leading to paralysis, respiratory failure and cardiac arrest, responsible for death in most of the cases. The localized symptoms of the bite are paraesthesiae around the mouth,

headache, blurred vision, dizziness, vomiting and hyper-salivation (Price, 1998 ; Tennant, 1995).

#### **Lizards and Calotes**

Lizard and Calotes bites are although uncommon, but may be frightening. The two species of lizard, poisonous enough to cause health problems, are Gila monster and Mexican beaded lizards. A bite from a lizard leave teeth marks, a minor scrape or puncture wound. Envenomation by poisonous species occurs by contamination of the wound with venom which is neurotoxic in nature. Severe pain with rapid swelling at the site of the bite, numbness and tingling are the localized symptoms. Confusion, semi-consciousness and sleepiness are other severe symptoms. Tissue injury and oedema may also be caused (Singh *et al.*, 2006).

### **DISCUSSION AND CONCLUSION**

According to the World Health Organization (WHO, 1995 & 2010), snake bites are estimated to cause more than 30,000 deaths per year in Asia, about 1,000 deaths each year in Africa and South America. India itself suffers a majority of death incidences, villages, forests and agricultural fields, due to snake bite and scorpion stings. In Mexico, over 63,000 snake bites and scorpion stings, with more than 300 deaths occur annually. About 20,000 scorpion stings are reported from Brazil. Periurban and remote areas slow more of such incidences (Reckziegel & Pinto, 2014).

**Table 1: Some of the Commonly observed Terrestrial Venomous Animals**

Animal Category	Venomous Creatures	Habitat
<b>Invertebrates : Arthropods</b>		
Arachnids	Spiders	Gardens & Fields
	Scorpions	Fields with moist soil
Chilopods	Centepedes	Agricultural Lands & Gardens
Insects	Bees	Vegetation & Abandoned places
	Wasps	Vegetation & Abandoned places
	Mosquitoes	Dark niches, Gardens
	Flies	Fields
	Ticks	Fields
	Mites	Fields
<b>Vertebrates : Reptiles</b>		
	Snakes	Gardens, Agricultural lands
	Lizards	Gardens
	Calotes	Gardens & Fields



Spider



Culex



Scorpion



Black Fly



Mite



Anopheles



Centepede



Honey Bee



Cobra



Viper



Calotes



Lizard

In the Mediterranean region South America and Mexico, the scorpion bite is responsible for more deaths than the poisonous snakes. The scorpions do not spontaneously attack humans, but stings only when it considers itself endangered.

The centipede poisoning is also fatal when it comes to the attack by the most dangerous species, from Phillippines. The venomous mites are also, in extreme cases, responsible for exceptional cases of death. The incidences of mice bites is high in tropical regions. As far the butterflies and caterpillars, the most species are found in Guyana and Central Africa. Blister flies from Japan, America and Kenya are very harmful. Sand flies from Middle East, and black flies from inter-tropical and Central Europe are venomous (Goddard, 1993).

As in Chhattisgarh, the venomous species are common, especially in Durg city, the poisoning behavior of poisonous snakes is of common occurrence. Lizard such as garden lizard and gecko are not so harmful. Calotes in gardens are commonly seen, but do not cause harm. Durg has many agricultural lands and fields in vicinity and in nearby villages, where scorpions and snakes, centipedes and spiders are seen frequently. Most of the venomous insects are known for their painful and poisoning behavior (Soubhagya Badhan *et al.*, 2014).

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