FIELD VISIT REPORT

VISIT TO SNAKE VENOM EXTRACTION UNIT– IRULAR COMMUNITY,MAHABALIPURAM, CHENNAI.

DATE OF VISIT: 18/12/2025 (THURSDAY)

DEPARTMENT: FORENSIC MEDICINE & TOXICOLOGY

A Batch of **ILANGATHIR** (2023-2029), 55 students were participated under the guidance of DR.S.THAMODHARAN M.D(S), DR.THAMIZHKKANI M.D(S), DR.JEMILA M.D(S).

INTRODUCTION :-

A Field visit was organized to the Snake Venom Extraction Unit operated by the Irular tribal community in Mahabalipuram, Tamil Nadu.

The purpose of this visit was to gain practical knowledge about snake venom extraction, understand the traditional expertise of the Irular tribe in snake handling, and learn about the scientific, ethical, and medicinal importance of snake venom, especially in the production of anti-snake venom (ASV).

The Irular community is well known for their hereditary knowledge of snakes and has played a crucial role in reducing human–snake conflict and contributing to public health through venom collection.

OBJECTIVES OF THE FIELD VISIT :-

- To understand the process of snake venom extraction.
- To study the traditional skills and knowledge of the Irular community in snake handling.
- To learn about the safety measures and ethical practices followed during venom extraction.
- To understand the medicinal importance of snake venom in the pharmaceutical industry.
- To observe how traditional knowledge is integrated with modern scientific practices.

ABOUT THE IRULAR COMMUNITY :-

The Irulars are an indigenous tribal community of Tamil Nadu with generations of experience in snake tracking and handling. Traditionally dependent on forest ecosystems, they possess deep ecological and zoological knowledge. Today, their skills are integrated with scientific institutions and forest departments, providing sustainable employment while supporting public health and biodiversity conservation.

TYPES OF SNAKES OBSERVED :-

During the visit, detailed information was provided about the “Big Four” venomous snakes :-

- Indian Cobra (Naja naja)
- Russell’s Viper (Daboia russelii)
- Common Krait (Bungarus caeruleus)
- Saw-scaled Viper (Echis carinatus)

These four species of snakes are responsible for most snakebite cases in India.

CHARACTERISTICS OF VENOMOUS SNAKES :-

1.Indian Cobra (Naga Pampu - Naja naja)

- Venom is neurotoxic and cardiotoxic.
- Primarily affects the nervous system and heart.
- Spreads a hood when threatened.
- Responds to ground vibrations, not sound (snake-charming music is a myth).
- Symptoms usually appear within 4 hours of bite
- Reproduces by internal fertilisation.
- Female is oviparous and lays eggs, which hatch after incubation.

2.Russell's Viper (Kannadi Viriyan – Daboia Russelii)

- Responsible for a large number of fatal snakebite cases in India.
- Produces a loud hissing sound when threatened.
- Venom is predominantly hemotoxic.
- Blood clotting time may be prolonged beyond 6 minutes.
- Fangs are large and well-developed.
- Venom extraction is typically done once a week.
- Skin shedding (ecdysis) occurs approximately once every three months.
- Improper tight bandaging after bite may lead to gangrene.

3.Common Krait (Kattu Viriyan – Bungarus Caeruleus)

- Highly venomous snake with potent neurotoxic venom.
- It is an Oviparous which lays eggs.
- Nocturnal in nature; most active at night.
- Bite is usually painless, with minimal or no local swelling.
- Symptoms are delayed, appearing 12 hours to 2 days after the bite.
- Causes paralysis of respiratory muscles, leading to respiratory failure.
- Requires immediate treatment with Anti-Snake Venom (ASV) and respiratory support.

4.Saw-Scaled Viper (Churutai Viriyan – Echis carinatus)

- One of the most dangerous vipers in Tamil Nadu.
- Has a rough, shiny body with keeled (saw-like) scales.
- Produces a distinct warning sound by rubbing its scales together.
- It is an Oviparous which lays eggs.
- Cold-blooded and mainly active during cool nights.
- Bite may initially resemble a mosquito bite, with minimal local signs.
- Venom is strongly hemotoxic, causing blood clotting disorders.
- Eyes often appear partially closed, giving a drowsy appearance.

SNAKE VENOM EXTRACTION PROCESS :-

- The venom extraction process is conducted in a systematic, controlled, and humane manner.
- Snakes are handled only by trained and licensed Irular snake handlers to ensure safety and animal welfare.
- The snake is gently restrained and encouraged to bite a sterile container covered with parafilm or latex membrane.
- Venom is naturally expelled through the fangs into the container without causing harm to the snake.
- The collected venom is carefully measured, labeled, and documented.
- Venom is then subjected to freeze-drying **(lyophilization)** to preserve its biological activity.
- The resulting lyophilized venom powder is stored under controlled laboratory conditions (low temperature, light-protected).
- Each snake is health-monitored after extraction.
- Snakes are marked for identification and given adequate recovery time before the next extraction.
- This process ensures ethical handling, sustainability, and high-quality venom for Anti-Snake Venom (ASV) production.

SAFETY MEASURES AND ETHICAL PRACTICES :-

- **Protective equipment** such as gloves, snake hooks, restraining tubes, and face shields are used to ensure the safety of handlers and prevent accidental bites.
- Minimal stress is ensured for snakes by gentle handling, avoiding rough restraint, and limiting the duration of each extraction session.
- Venom extraction frequency is strictly limited, allowing sufficient **recovery time** so that the snake's health and natural venom regeneration are not affected.
- Regular **health monitoring** is carried out before and after extraction to check for injuries, infection, or signs of stress.
- All procedures are conducted in strict compliance with the **Wildlife Protection Act, 1972,** ensuring legal and ethical treatment of wildlife.
- The entire process is performed under the supervision of authorized forest department officials, ensuring transparency, accountability, and adherence to conservation norms.

SNAKEBITE IDENTIFICATION AND FIRST-AID AWARENESS:-

- **Venomous bite**: Presence of two distinct fang marks with pain, swelling, bleeding, or discoloration at the bite site.
- **Dry bite**: Fang marks present without venom injection, showing no swelling or systemic symptoms, but still requires medical observation.
- Do **NOT suck** venom by mouth: Ineffective and dangerous; may cause infection and spread toxins through mouth wounds to the brain and eyes.
- Avoid unscientific practices, as they delay treatment: Mantras,Herbal applications,Amulets,Applying urine & avoid Tight rope or tourniquet tying -may cause gangrene and limb damage.
- Immediate **immobilization** of the bitten limb is essential to slow venom spread.
- Keep the patient calm and still to reduce circulation of venom.
- Urgent transport to the nearest hospital for **Anti-Snake Venom (ASV)** and supportive care is lifesaving.

IMPORTANCE OF SNAKE VENOM:-

- Snake venom is a **valuable biological resource** with significant medical and scientific importance.
- The primary use of snake venom is in the production of Anti-Snake Venom (ASV), which is the only specific and **effective treatment for venomous snakebites.**
- Certain venom components are used in the **treatment of blood clotting disorders**, as they help study and **regulate coagulation mechanisms**.
- Snake venom **plays a vital role in cardiovascular and neurological research**, aiding in the development of drugs for heart diseases, stroke, and nerve disorders.
- Through these medical applications, snake venom **saves thousands of lives** every year worldwide.

CONCLUSION:-

The field visit to the Snake Venom Extraction Unit operated by the Irular community was highly informative and educational. It clearly demonstrated how traditional indigenous expertise, when integrated with modern scientific practices, plays a vital role in public health, wildlife conservation, and social empowerment.

The visit significantly enhanced our understanding of venomous snake species, ethical venom extraction procedures, and the crucial importance of Anti-Snake Venom (ASV) in the effective management of snakebite cases and in saving human lives.