Tetrodotoxin (TTX)

Prelims: *Current events of national and international importance*

Why in News?

Food safety authorities and doctors suspect that the severe illness in people who consumed seafood at a Vizhinjam restaurant was caused by contamination with tetrodotoxin (TTX).

- It is a ***highly potent, naturally occurring marine neurotoxin.***
- **Found in -** Certain fish and marine organisms; commonly found in pufferfish, octopus (especially blue-ringed octopus), certain crabs, starfish, and marine bacteria.
- Produced by ***symbiotic bacteria,*** not by the fish itself.
- **Nature of toxin -** It is a ***non-protein, heat-stable neurotoxin*** (not destroyed by cooking or freezing).
- Even very small amounts can be **fatal**.
- **Mechanism of action -** Blocks voltage-gated sodium channels in nerve cells.
- This prevents transmission of nerve impulses, causing **paralysis**.
- **Symptoms of poisoning**
  - **Early** - Numbness of lips and tongue, tingling sensation
  - **Moderate** - Vomiting, dizziness, muscle weakness.
  - **Severe** - Paralysis, respiratory failure, and death in extreme cases.
- **Treatment -** No specific antidote available
- Treatment is mainly supportive care, especially respiratory support
- **Public health significance -** Recognized as a serious marine toxin risk by organizations such as the World Health Organization.
- Associated with food poisoning from contaminated seafood, especially in coastal regions.

Reference

The Hindu | Tetrodotoxin



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