A Method For Treating Saxitoxin Poisoning

Tech ID: 34482 / UC Case 2022-164-0

TECHNOLOGY DESCRIPTION

Unmet Need: Saxitoxin (STX) is a potent paralytic neurotoxin produced by marine cyanobacteria and dinoflagellates, responsible for paralytic shellfish poisoning (PSP) and declared a chemical weapon due to its lethality. PSP outbreaks, exacerbated by climate change, pose significant public health risks, leading to restrictions on commercial and recreational shellfish harvesting. Currently, there are no targeted medical countermeasures available to mitigate STX poisoning.

TECHNOLOGY: To address this critical need, we have characterized two families of high-affinity STX-binding proteins—saxiphilins from amphibians and Pufferfish Saxitoxin and Tetrodotoxin Binding Proteins (PSTBPs)—that can reverse the toxin's effects on voltage-gated sodium channels (NaVs).

COMPETITIVE ADVANTAGE:

- **First-of-its-kind medical countermeasure** targeting STX and related PSP toxins.
- **Reverses STX effects on voltage-gated sodium channels**, restoring neural function.
- **Adaptable protein-based approach** leveraging saxiphilins and PSTBPs from amphibians and pufferfish.
- **Addresses a growing public health challenge** linked to climate-driven PSP outbreaks.

DEVELOPMENT STAGE: The technology is currently in the proof-of-concept stage.

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Reference for National Filings	WO 2023/240270	03/07/2024	2022-164

Patent Pending

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OTHER INFORMATION

KEYWORDS

Saxitoxin, Paralytic shellfish poisoning, Saxiphilins, sodium channels

CATEGORIZED AS

- Biotechnology
  - Health
    - Medical
      - Diagnostics
      - Disease: Central Nervous System
    - Security and Defense
      - Food and Environment

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