

ORIGINAL PAPERS

COMPARISON OF VINEGAR AND METHYLATED SPIRITS AS TREATMENT FOR CYANEA CAPILLATA (HAIR JELLYFISH) STINGS

Peter J Fenner
and
Peter F Fitzpatrick

SUMMARY

Vinegar has already been proven to cause de-activation of the nematocysts of many jellyfish and other Cnidarians including the deadly *Chironex fleckeri*, and as such is the ideal immediate treatment on the beach.¹

More recently it has been shown that *Chrysaora quinquecirrha* (the North American sea nettle) reacts in the opposite way and vinegar causes discharge of the nematocysts² and because of its similarity to *Chrysaora*, *Pelagia noctiluca* (little mauve stinger) must also be suspected of having nematocysts discharged by vinegar.

Recent tests with isolated tentacles of *Cyanea capillata* (the "hair jelly" or "snottie") also show that the nematocysts are actively discharged by vinegar but not by methylated spirits. However, there is no difference to the clinical effects of the sting and because of the life saving benefits of vinegar in *Chironex* stings, the initial first aid must continue to be vinegar poured in copious quantities all over the envenomated area.

INTRODUCTION

All jellyfish, and many other Cnidarians, possess the nematocyst, a small stinging cell by which they poison, paralyze and consequently trap their prey. Most of these nematocysts have different morphological features and by microscopic study, it is often possible to identify the envenomating animal.³

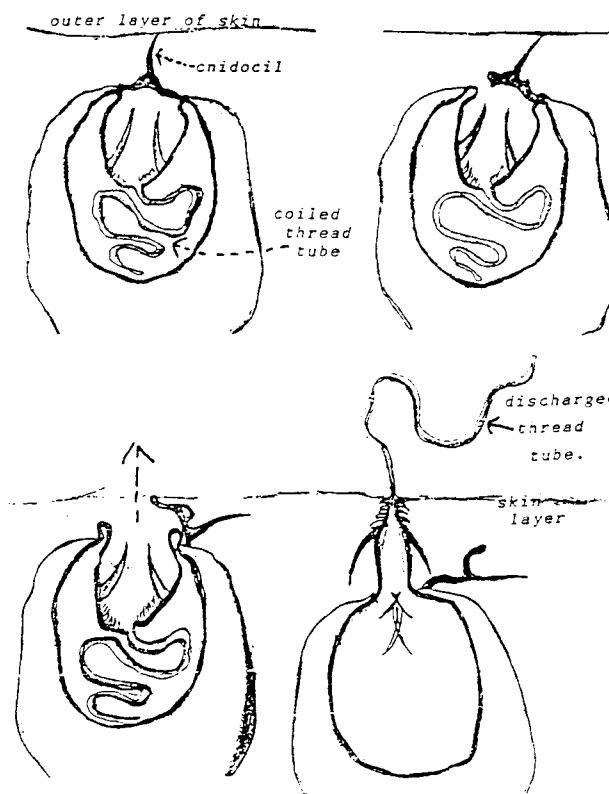
The nematocyst is a specialized capsule which contains the specific venom of the animal. Inside this capsule is a coiled thread tube which is hollow to allow the passage of venom.

On the outside of the nematocyst is a cnidocil which is a small 'trigger mechanism' which when touched causes the thread to uncoil itself quickly and it fires, rather like a harpoon, deep into the tissues of its prey. Hydrostatic pressure causes the vigorous 'firing' of the thread tube.^{3,4}

The venom then passes through the hollow centre of the tube and is deposited into the body of the prey where it causes its specific effects.

The action of vinegar and methylated spirits is to dehydrate the tentacle, although it is obvious that different chemicals can have different effects on the nematocysts of different species.

Whilst trying different solutions for fixing and then studying the isolated tentacle of *Cyanea capillata* (the "hair jelly"), it was noticed that on a tentacle fixed in vinegar, most of the nematocysts had discharged.



Schematic drawing of a nematocyst firing

LABORATORY EXPERIMENTS

Isolated pieces of *Cyanea* tentacle were mounted in solutions of sea water, vinegar (4-6 per cent acetic acid) and methylated spirits and studied under the microscope.

The slides with the tentacles in the sea water and the methylated spirits showed that very few of the nematocysts had discharged. Conversely, the slide with the tentacle fixed in vinegar showed that most of the nematocysts were discharged.

The experiment was also tried with tentacles still attached to the whole animal to see if there may be a 'nervous' response that could cause a reflex discharge of the nematocysts, but the results remained exactly the same i.e. vinegar causes discharge of the nematocysts, whereas methylated spirit does not.

DISCUSSION

Vinegar is found to cause discharge of the nematocysts of *Cyanea capillata* whether or not these are attached to the animal or on isolated tentacles.

The sting of the *Cyanea* although florid in appearance, causes very little pain or discomfort and no systemic effects.^{3,5,6} There is therefore little actual clinical effect of pouring vinegar on to an envenomated victim. There is a great clinical effect if vinegar is not used in victims stung by *Chironex*. By using vinegar you may save a life if the sting is from *Chironex fleckeri* while you will not cause any medical problems by using vinegar on *Cyanea* stings.

First aid teaching must remain simple if it is to work. The Surf Life Savers in North Queensland will be taught to continue the life saving technique of

Vinegar + Resuscitation = Life

REFERENCES

1. Hartwick RJ, Callanan V and Williamson JAH. Dismantling the box jellyfish. *Med J Aust* 1980; 1: 15-20.
2. Burnett JW, Rubinstein H and Calton GJ. First aid for jellyfish envenomation. *Sth Med J* 1983; 76: 870-872.
3. Cleland Sir JB and Southcott RV. Injuries to man from marine invertebrates in the Australian region. Canberra: NHMRC, 1965; Special Report Series No. 12.
4. Hyman LH. *The Invertebrates. Protozoa through Ctenophora.* New York: McGraw Hill Book Co., 1940: 382.
5. Williamson JAH. *The marine stinger book.* 3rd ed. Queensland State Centre, Surf Lifesaving Association of Australia, 1985.
6. Sutherland SK. *Australian Animal Toxins: the creatures, their toxins and the care of the poisoned patient.* Melbourne: Oxford University Press, 1983.

Dr PJ Fenner's address is PO Box 34, North Mackay QLD 4740.

Dr PF Fitzpatrick's address is PO Box 1284, Mackay QLD 4740.

A letter to the Medical Journal of Australia (1986 ii: 174) on this subject from these authors appeared in August. This paper is published to bring the information to a wider audience.

THE MORBAKKA -

ANOTHER SPECIES OF BOX JELLYFISH

Peter J Fenner

SUMMARY

There is a large cubomedusan in the family Carybdeidae that has previously been known as *Tamoya haplonema* or fire jelly. It has been reported throughout Queensland from Port Douglas to Moreton Bay where it is known as the "Moreton Bay stinger". After a recent case of severe envenomation in South Queensland and the examination of two specimens caught in Mackay Harbour, it has been recognized as being a new species.¹

Until it is formally identified, the name 'morbakka' has recently been suggested by Dr Ron Southcott² after "Moreton Bay carybdeid medusa" the area in South Queensland where they were first reported.

Vinegar has been shown to inactivate the undischarged nematocysts (stinging cells) of this species and is recommended as the initial first aid treatment.¹

INTRODUCTION

On 18 and 23 April 1985, two large specimens of a morbakka were found in Mackay Harbour. The larger specimen was 130mm in diameter across the body of the bell, and the height of the bell was 180mm (Figure 1). The other specimen was 120mm in diameter and had a bell height of 150mm.



Figure 1. Morbakka caught in Mackay Harbour. Note the gloved hand. Nematocysts are present on the bell as well as on the tentacles.

Each specimen had four large mauve tentacles, one attached to each corner of the bell. The tentacles on the larger specimen were well preserved and reached a length of 600mm when extended, they contracted to a length of 200mm. After preservation in 10 per cent formalin and sea water they contracted even further to a length of 60mm. The tentacles were ribbon shaped 10mm wide but only 3mm thick. They had a multiple transverse bar pattern similar to, but much larger than those of the *Chironex fleckeri*. Unlike those of *Chironex* the central canal in the pedalium did not have the "hook" or "rose thorn" appearance.³

Also, unlike *Chironex*, the bell was covered with numerous warty mauve mamillations. Each of these contained hundreds of nematocysts which were capable of causing even the thick skin of the palm to tingle when the animal was picked up. The bell is