

the Australian experience indicates that mannitol is most useful when given early in the acute phase of the illness (Fig.1), and may be of less benefit when given during the normal recovery phase of ciguatera. A double-blind clinical trial of the mannitol therapy has not been reported to date.

The mechanism of mannitol's beneficial action in cases of ciguatera has been studied by the Ciguatera Research Group at the Southern Fisheries Centre, Deception Bay. These studies indicate that mannitol does not displace ciguatoxin from its site of binding, nor does it chelate ciguatoxin. The appearance of an oedema (swelling) of the cells (Schwann cells) surrounding myelinated peripheral nerves (and possibly similar cells in the central nervous system) in cases of ciguatera may provide the explanation. Hyperosmotic mannitol, through its water drawing action would reduce this cell swelling and thereby effectively reverse the course of this often distressing and debilitating disease.

To explain the long term effectiveness of mannitol, I hypothesise that (i) mannitol prevents long-term nerve damage (eg. lesions, anoxic zones) that probably develops from the oedema (ii) ciguatoxin normally remains bound to its receptors in the body

only for a few days (not weeks), and the longer-term effects of ciguatera relate to nerve damage.

These hypotheses also explain why mannitol would be most effective when given early in the disease. Interestingly, it has been repeatedly observed in Australia that the diuresis that would normally follow an infusion of mannitol does not appear when mannitol is used to treat ciguatera (all patients were adequately hydrated). The explanation for this observation is not apparent, but it does suggest that mannitol does not act to flush ciguatoxin from the body by increasing urine output. Further studies are required to define more precisely why mannitol is useful in the treatment of ciguatera.

References

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Fourth International Conference on Ciguatera Fish Poisoning in Tahiti

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Researchers studying ciguatera presented the latest research developments and exchanged information at the Fourth International Ciguatera Conference in Papeete from 4 to 7 May. Inshore Fisheries Scientist Paul Dalzell represented SPC.

Topics ranged from general country statements about ciguatera and the ecology of the dinoflagellate, *Gambierdiscus toxicus*, to the results of highly specialised physiological research on the mechanism by which ciguatoxins affect nerve and muscle cells.

Paul Dalzell and Richard Lewis of the Queensland Department of Primary Industry jointly chaired the session on the socio-economic impact of ciguatera. Paul presented summaries of data on fish landings in the Pacific Islands and incidence of ciguatera. He also introduced the new SPC Fisheries Programme/Health Programme Ciguatera Database and gave some preliminary results. Participants were also given a chance to see the new commercially produced ciguatera kits produced by Hawaii Chemtect International. These are based on the monoclonal antibody test devised by Dr Y. Hokama of the Hawaii University Medical School.

Two forms of test kit were demonstrated to the meeting: a small disposable kit containing a single test, and a larger more elaborate kit containing equipment and re-agents for multiple testing. The single test comes in card form, contains all the re-agents, and is designed to be used to test one fish. The larger kit, which can be used for up to 50 tests, is designed for multiple testing on one fish or testing several fish.

About 100 persons attended the meeting. The Pacific Islands were well represented, with people attending from the Cook Islands, the Federated States of Micronesia, Fiji, French Polynesia, Guam, Kiribati, New Caledonia and Solomon Islands. Participants also came from Australia, France, Germany, Japan, Mayotte, Martinique, Puerto Rico, Réunion and the United States.

The Inshore Fisheries Research Project supported the attendance of Edwin Oreihaka from the Solomon Islands Fisheries Division and Ahser Edwards from the Community College of Micronesia in the Federated States of Micronesia.

The conference proceedings, containing the papers presented at the meeting, will be published later this year. The venue for the next conference has yet

to be decided. However, Dr Lewis is organising a ciguatera management workshop to be held in Queensland, Australia, in May 1993.

Note: Below are summaries of the country statements from Solomon Islands, Fiji and the Cook Islands which were presented at the conference.

Ciguatera in the Solomon Islands

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Ciguatera fish poisoning receives very little recognition in Solomon Islands. There is no organised research or monitoring of ciguatera fish poisoning carried out in Solomon Islands as yet, so as to determine the current status of the problem and there are other major health problems such as malaria to worry about.

Though there have not been any confirmed cases of ciguatera fish poisoning in the Solomon Islands as yet, from traditional knowledge and anecdotal information on case histories, fish poisoning which was probably ciguatera has occurred in certain areas. These are restricted to reefs, atolls and small islands. No cases of ciguatera fish poisoning appear to have occurred on any of the major islands in the Solomon Islands.

Fish species which are considered ciguatoxic in the Solomon Islands include;

- *Lutjanus bohar*
- *Lutjanus sebae*
- *Sphyraena barracuda*
- *Symphorichthys spirilus**
- *Platax teira*.

It is believed that some people have traditional medicine for treating ciguatoxin-intoxicated patients.

Apart from the regulation imposed by the Provincial Government of Temotu Province, which prohibits sale of fish species considered ciguatoxic in the province, there is no law or regulation concerning ciguatera poisoning in Solomon Islands.

Ciguatera fish poisoning is as yet not a major health problem in Solomon Islands. It is therefore not clear at this stage as who should take responsibility for dealing with ciguatera issues. It does, however, threaten coastal fisheries development and thus perhaps should principally be regarded as a fisheries problem. For further information on ciguatera in the Solomons please contact the Permanent Secretary, Ministry of Natural Resources, Fisheries Division, P.O. Box G24, Honiara, Solomon Islands.

* Note from the editor: it could be *Symphorus nematophorus*

Status of ciguatera in Fiji

by Parmanand Singh,
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In Fiji, cases of ciguatera have increased significantly in the last decade. In 1989, 1990 and 1991 the number of cases attended by government medical authorities were 683, 787 and 1,012 respectively. Some people call these figures alarming because innocent people are victims of intoxication and the inability of fisheries science to address the problem which has occurred for quite some time. Ciguatera poisoning is seen as an unnecessary obstacle in coastal fisheries development.

Ciguatera in Fiji causes many symptoms in humans, depending on the dosage received. These include gastrointestinal (diarrhoea, pain, nausea),

neurological and cardiovascular disturbance. Symptoms begin a few hours after eating the fish and can last for days and months. After recovering from a bout of ciguatera poisoning, the symptoms can be brought on again after eating more fish, even if those fish would not harm another person.

There is no cure for ciguatera poisoning yet and treatment is symptomatic only. Aspirins and Panadol tablets are used as painkillers, Phagon tablets and Stemetil injections for vomiting, and patients with diarrhoea, vomiting and dehydration are treated with intravenous fluids (only patients with these serious symptoms are admitted to hos-