These fish included 2 *papio* (*Caranx* sp.), 1 mullet (*Mugilephalus*), and 1 *po'ou* (*Cheilinus rhodochrous*). Finally, the 17 SPIA-positive-tested fish eaten (8% of 218 fish), 5 caused ciguatera poisoning. This involved 2 *papio* (*Caranx* sp.), a *kole* (*Ctenochaetus strigosus*), an *uhu* (*Scarus*) and a *weke* (*Mullloidichthys auriflamma*).

The SPIA test used by the fishermen was successful in protecting the public when SPIA-negative fish eaten caused no illness, that is, there were no false negatives.

We have contended that a person who is genetically more susceptible, or has had long-term exposure to reef fish consumption in endemic regions, will be most likely to become ill from eating SPIA-borderline or positive fishes. Indeed, this appeared to be the case.

The data suggested that the probability of getting ill with SPIA-positive fish is 1 out of 3; with the borderline fish, 1 out of 50. As indicated, if the fish is negative by SPIA the possibility of ciguatera is nil. The *Caranx* spp. (*papio* or *ulu*) appeared to be the major culprits causing ciguatera. This is compatible with the Department of Health reports for ciguatera in Hawaii.

References


Ciguatera fish poisoning: the situation in New Caledonia

**Situation**

The coral reef surrounding the islands of New Caledonia has a particularly rich biological diversity with numerous fish species.

However, visiting the fish market in Noumea, one is surprised that relatively few reef species of fishes are sold, compared with sales of deep-slope and pelagic fishes. Ciguatera fish poisoning is believed to be responsible for this situation.

An investigation performed in March 1992 in Noumea on a representative sample of 500 people, indicated that 124 of them (nearly 25%) had been intoxicated at least once (Laurent et al.1993). This percentage varied according to the ethnic groups: Polynesians 44 per cent, Asians 34 per cent, Europeans 24 per cent, Melanesians 23 per cent and Wallisians 18 per cent.

According to the April 1989 census, the population of the city, excluding children under 10 years old, was 79,167. It is therefore possible to estimate that 20,000 persons were affected by this intoxication. This result suggests that the current estimates from the South Pacific Commission (based on figures reported by health authorities in New Caledonia) may be significantly below the real incidence of ciguatera intoxications in New Caledonia, mainly because a large number of cases only concern weak intoxications, not declared to doctors or hospitals, and frequently cured by traditional medicine(s).

**A widespread phenomenon**

Ciguatera poisoning is widespread in the outer islands of New Caledonia. According to local reputation rather than scientific analysis, the north of the mainland has non-toxic fishes as compared with the south. A similar comparison can be made between the island of Ouvea and the other Loyalty Islands. Some places are reputed always to harbour toxic fishes.
To eat fish safely in a specific location, people must refer to local knowledge on species and/or trust the supply from fishermen or from restaurant owners. Many people have adopted the habit of always choosing the same fish, not changing even when there is no intoxication. New Caledonia has no laws or regulations concerning ciguatera poisoning.

Ciguatera is a fisheries and a health problem in New Caledonia. As it has been known to exist since before the 1600s, people 'live with' this intoxication as a common problem associated with fish consumption. The number of severe cases is not sufficiently high to provoke a political response and the precise impact of these intoxications on social life still remains unknown.

Fish incriminated

The incriminated fish species in 90 per cent of cases are carnivorous species:

<table>
<thead>
<tr>
<th>Family</th>
<th>Percentage</th>
<th>Species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serranidae</td>
<td>43%</td>
<td>groupers, coral trout</td>
</tr>
<tr>
<td>Lethrinidae</td>
<td>13%</td>
<td>emperors</td>
</tr>
<tr>
<td>Scombridae</td>
<td>13%</td>
<td>Spanish mackerel</td>
</tr>
<tr>
<td>Lutjanidae</td>
<td>11%</td>
<td>red snapper, hussard</td>
</tr>
<tr>
<td>Carangidae</td>
<td>3%</td>
<td>trevallies</td>
</tr>
<tr>
<td>Haemulidae</td>
<td>3%</td>
<td>sweetlips</td>
</tr>
<tr>
<td>Scaridae</td>
<td>6%</td>
<td>parrotfish</td>
</tr>
</tbody>
</table>

Traditional medicines and tests

The use of traditional cures is appreciable. It reaches 56 per cent among Melanesians, 44 per cent for Polynesians and 36, 29 and 29 per cent for Asians, Wallisians and Europeans respectively.

The medicine preferred for 40 per cent by people is *Argusia argentea*.

In an attempt to avoid ciguatera, some local people use tests including (i) the repellent effect of toxic fishes on ants, (ii) the toxicity test on cats, (iii) black colouring of a silver stick, and (iv) an electrical sensation on tasting the liver. Only the cat test and probably the liver-tasting test are likely to provide a margin of safety.

Reference