A B S T R A C T

CIGUATOXIN

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Ciguatoxin as isolated from the flesh of *Gymnothorax javanicus* is a labile yellowish oil with an LD_{100} of 0.1 - 0.5 mg/kg (intraperitoneal injection in mice). It lacks distinctive ultraviolet absorption, but its infrared spectrum reveals the presence of hydroxyl and carbonyl moieties. Functionality tests fail to detect the presence of primary amino groups but indicate the presence of a quaternary amine moiety. Elemental analyses suggest an approximate empirical formula of $C_{35}H_{65}NO_8$ thus indicating a highly oxygenated molecule.

Mild acid or base hydrolysis liberates glycerol, fatty acids, water-soluble and organic soluble amine products. Gas-liquid chromatography reveals that the fatty acids are mixtures of which the major components are myristic, palmitic, palmitoleic, stearic, and oleic acids. High resolution mass spectral measurements of the water-soluble products indicate a large molecule with three nitrogen atoms. The organic soluble degradation product contains a quaternary amine function.

Oxidation followed by vigorous acid hydrolysis resulted in additional products. One of the fragments is non-nitrogenous and contains a linear hydro-carbon chain of about thirty carbon atoms. Another degradation product contains a quaternary amine moiety attached to a large alkyl group. A number of water-soluble amine fragments were also isolated. Chemical degradations and mass spectral measurements indicate that ciguatoxin is a large complex molecule in which the nature and exact number of nitrogen atoms are not yet known.