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82. MERCURY LEVEL IN THE EDIBLE OYSTER, *CRASSOSTREA MADRASENSIS*

G. Indra Jasmine, C.B.T. Rajagopalsamy and G. Jegatheesan
Fisheries College, Tamil Nadu Agricultural University, Tuticorin-628 008

ABSTRACT

Chemical analysis of the meat of *C. madrasensis* of size range 75-151 mm and meat weight of 2-2.6 g showed that the level of mercury was less than the accepted standard limit of 0.5 ppm in the edible meat.

INTRODUCTION

Like fish, adult bivalves are also known for their ability to accumulate mercury even from low levels in water (Vernberg et al 1979; Love 1980). Chichester and Graham (1973) stated that mercury is a cumulative poison which causes injury through progressive and irreversible accumulation in the human body as a result of ingestion of repeated small amounts, which causes sublethal or even lethal effects in the human population. The best known incidence of casualty due to ingestion of mercury contaminated sea food is the minamata disease which occurred in Japan in 1953 and 1964 (Kurland et al 1969; D'ITRI 1977). An understanding of the level of total mercury in the flesh of edible sea food will help us to recommend it for safer human consumption (Bligh 1972; Kamps et al 1972; Jayachandran and Raj 1975; Arima and Umemoto 1976; Neelakantan 1976; Sankaranarayanan et al 1978; Kumagai & saeki 1978; Eisler 1981; Geyer 1981; Philips et al 1982; Ekanath and Menon 1983; Itano and Sasaki 1983; Ndiokwere 1983; Rickard and Dulley 1983; Harakheh and Aftim 1985; Kakulu Dsibanjo, 1986). The present study has been designed for the determination of the level of total mercury in the flesh of edible oyster *C. madrasensis* in Tuticorin waters.

MATERIAL AND METHODS

The specimens of edible oyster, *C. madrasensis* were collected from the coastal waters of Tuticorin Bay (N=29). The length, breadth and weight of the whole oysters were recorded. The edible flesh weight was also recorded. The size range of the oyster varied from 75 mm

to 151 mm in length and 52 mm to 82 mm in breadth. The flesh weight of the oyster examined varied from 2 to 9.6 g. The level of total mercury content in oyster flesh was determined following the method suggested by Louie (1983). A mercury analyser (Electronic Corporation of India Limited MA 5880A model) was used in the above estimation. The results were expressed as ppm on dry weight basis.

RESULTS

The present study reveals that the level of total mercury content in the edible oyster *C. madrasensis* varies from 0.0024 ppm to 0.17 ppm with a mean value of 0.045 ± 0.0813 ppm. Hussain and Bleiler (1973) are in accordance with the results of present study that the contamination of mercury in oyster *Crassostrea commercialis* varied widely from very low level to high concentrations.

The relationship between the total mercury content and length, breadth and flesh weight of *C. madrasensis* is presented in Figure 1 and were peculiar to note that the mercury level in the edible oyster was decreasing with increase in size groups of breadth and flesh weight. This is in agreement with result reported by Cunningham and Tripp (1975) that only small oysters (less than 7.85 g) contained significantly higher mercury content than larger individuals (7.86-20.98 g). This may be due to the more rapid turn over of cellular material and subsequent increase in body weight which will dilute the metal concentration and smaller bivalves have a larger surface to volume ratio than larger individuals, therefore proportionately more surface area will

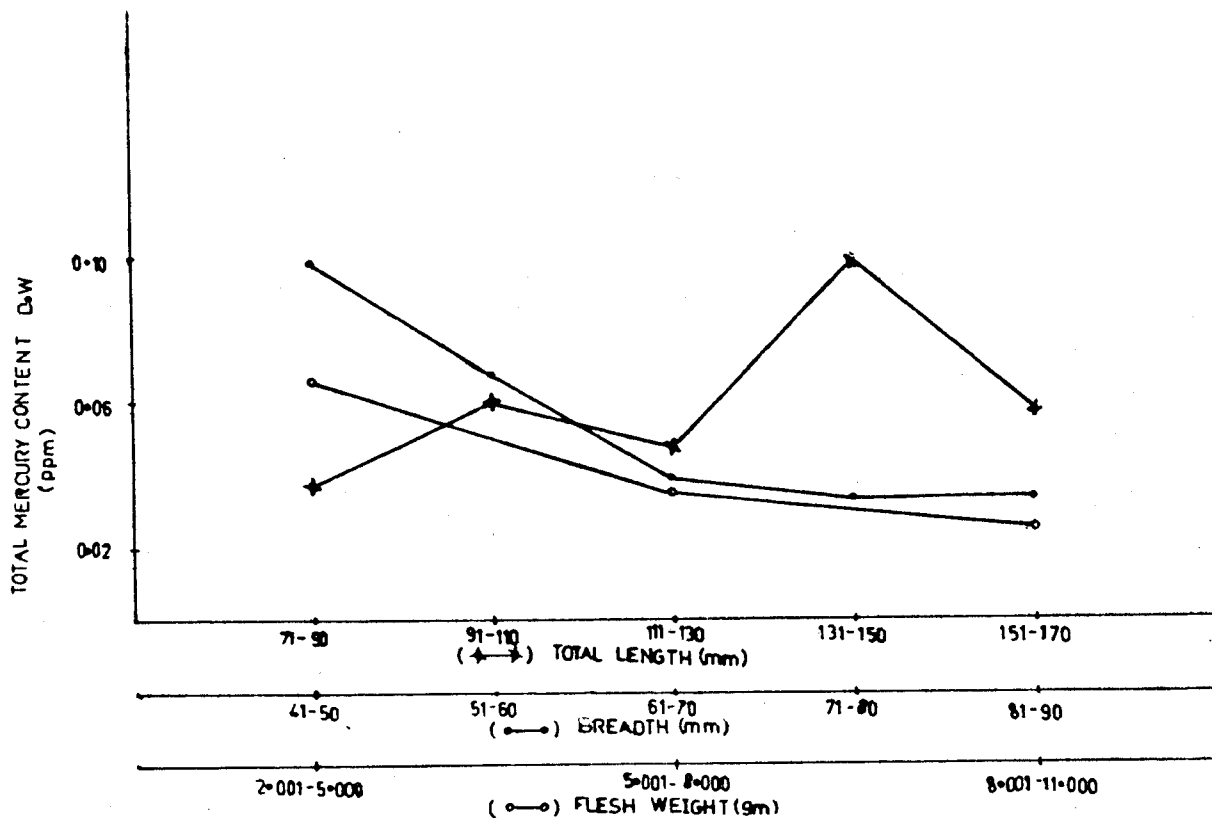


Fig. 1. Relationships of mercury with length, breadth and flesh weight of oyster.

be available for both the accumulation and removal of metals to occur (Dame 1972). From the present study, it is clear that the level of mercury contamination in edible oyster *Crassostrea madrasensis* from Tuticorin water was well below than the standard limit of 0.5 ppm dry weight basis (FAO 1933) and can be recommended for the safe human consumption.

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