INFECTION OF BALTIC SADURIA ENTOMON (LINNAEUS, 1758) (ISOPDA, VALVIFERA) WITH THE YEAST CRYPTOCOCCUS LAURENTII (KUFFERATH) SKINNER

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ABSTRACT

Light and electron microscopic and microbiological examination of the infected haemolymph of wild Saduria entomon (Linnaeus, 1758) revealed the presence of the yeast Cryptococcus laurentii (Kufferath) Skinner, 1947. Phagocytosis of C. laurentii by granulocytes was observed. This is the first report about the infection of isopods with yeasts.

INTRODUCTION

Some species of yeasts are known to be etiological agents of crustacean diseases. Van Uden & Castelo-Branco (1961) described Metschnikowiella zobelli and Metschnikowiella krissii, two new yeast species from the Pacific Ocean, pathogenic for Daphnia magna (Straus, 1820). Spencer et al. (1964) isolated four strains of Metschnikowia kamensisii from the brine shrimp Artemia salina (Linnaeus, 1758) found in a saline lake in Canada. Metschnikowia bicuspidata (Kamienski, 1899) and Metschnikowia artimiae (Kamienski, 1899) were found in Daphnia magna and Artemia salina from Romania (Codreanu & Codreanu-Balcescu, 1981).
There is no information available about the infection of Crustacea with Cryptococcus laurentii (Kufferath) Skinner, 1947.

During light microscopic studies of the haemolymph of S. entomon (Linnaeus, 1758) that have been conducted for many years, yeast-like fungi were observed for the first time in some specimens collected in the autumn of 1989. A microscopic examination of the haemolymph of S. entomon collected in the autumn of 1990 revealed yeast-like cells in many specimens. Observations of S. entomon collected in the spring of next year showed yeast cells to be present in the haemolymph of all individuals examined, in some of them completely filling the body cavity.

The present study reports on light and electron microscopic examinations of the haemolymph of wild, yeast-infected specimens of S. entomon and the identification of the yeast isolated from their haemolymph.

**MATERIAL AND METHODS**

The specimens of Saduria entomon were collected in the Gulf of Gdańsk, Baltic sea (54°34'06"N 18°44'09"E) at a depth of 50 to 60 m during the spring of 1991. A group of 50 animals was examined two days after collecting. Infected specimens were chosen after yeast cells in the haemolymph had been ascertained by light microscopy. The haemolymph of four specimens was acquired by cutting off a walking leg and dripping the fluid on growth media. The yeast cultures were grown and maintained on malt extract and malt extract agar (Van der Walt & Yarrow, 1984) at room temperature for 4 to 5 days. The Dalmau plate technique was used to determine the presence of pseudomycelium. The yeast cells were stained using the Gram method and examined with light microscopy.

The physiological characteristics of the four isolates were determined by the conventional techniques applied in yeast classification (Van der Walt & Yarrow, 1984). For growth tests on carbon compounds, cultures were incubated on a shaker at 28 cycles/min for 28 days at 25° C. Growth on nitrogen compounds was tested on agar plates for 7 days at 25° C.

For electron microscopy the haemolymph was bled from a cut walking leg in to icecold 2.5% glutaraldehyde in the cacodylate buffer, pH 7.2. After 2 hours the haemolymph was centrifuged at 12,300xg for 6 minutes. The pellets were then postfixied in 1% osmium tetroxide for 1 h, washed in the cacodylate buffer, dehydrated through a graded ethanol series, and finally placed in two changes of propylene oxide and embedded in Epon. The sections were stained with uranyl acetate and lead citrate and examined in a JEOLCO JEM-7A.

**RESULTS**

Infected specimens of S. entomon show no visible external morphological symptoms that would distinguish them from unparasitized animals. However,