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Study on tolerating mechanism of sulfide of *Urechis unicinctus* II. Cytological observation on *Urechis unicinctus* in different sulfide environment

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Introduction

Urechis animal often presents in the rich H_2S sea area while majority animals can not live. It can tolerate the strong toxicity of H_2S. Many scholars are interested in the tolerating mechanism of H_2S in Urechis animal. Arp et al. indicated that the high-point tolerated of *Urchins caupo* for H_2S was 700 μM at the aerobic condition. Powell et al. proved that a kind of heme can promoted the oxidization of H_2S in *Urchins caupo*. The reports on tissue change of tolerating mechanism of H_2S were few at present. Menon et al. reported that the sulfur bacteria and sulfur oxidizing body (SOB) were contained in the cells of the body wall of *Urchins caupo*. He thought they provided an important route in resisting toxicity of H_2S.

Urechis unicinctus is Urechidae animal living in inter-tide lower section and infralittoral zone of coastal sand areas. It main distributes in China, Korea, Russia and Japan. In this paper, the structures of the body wall, aspiratory intestine and crissal bursa in normal water and rich H_2S environment separately were compared by light microscope and electronic microscope. We discussed the tolerating mechanism of tissue for H_2S primary.

Materials and Methods

1.1 Deal with the sample

The health individuals were selected after *Urechis unicinctus* were cultured 4 days in the normal water. The exam was divided into two groups. One was the control group which cultured in normal water. The other group was the test one which cultured in rich H_2S (0.65 mg/L) sea water. The number of test animal in every

group was two individuals.

1. 2 The sample of light and electronic microscope

The animals were anesthetized and anatomized by 400 mM $MgCl_2$ after treated two days. Its body wall and breath intestine as well as anus bursa were selected. The sample for light microscope (LM) was fixed in Bouins 24 hours. They were embedded with Paraffin by general method. The sections were 7μm and stained by H.E. They were observed and taken photos in the Olympus BH-2 light microscope. The sample for transmission electronic microscope (TEM) was fixed in 2.5% glutaraldehyde first and postfixed in the 1% osmium acid. Epon-812 embed. The sections were cut by LKB microtome. Uranium and lead double stain. The sections were observed and taken photos by Hitachi H-7000 type transmission electronic microscope.

Results and Disscussion

The Cytological change of the body wall, aspiratory intestines and crissal bursa in *Urechis unicinctus* was studied by using the light microscope and transmission electron microscope (TEM). The results showed that the difference of the body wall between the natural environment and the rich H_2S environment wasnt obvious; the tube wall of the aspiratory intestines in rich sulfide environment became to black from semitransparent, the epithelia were disassembled and the electron density of its cytoplasm lowered; in rich sulfide environment the basophilia granules appeared in the epithelia of the crissal bursa, the granule with single membrane and myelinefingure were found with TEM.

References

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