4136283SCAN/ M : MAJOR : ANATOMY; M.Sc. (ANATOMY)
KEY WORDS : SACCOSTREA FORSKALI / GONADAL HISTOLOGY / SPERMATOGENESIS
SASIPORN PANASOPHONKUL: SPERMATOGENESIS AND CHROMATIN CONDENSATION IN THE MALE GERM CELLS OF A MARINE OYSTER, SACCOSTREA FORSKALI GMELIN. THESIS ADVISORS: CHAITIP WANICHANON, Ph.D., PRASERT SOBHON, Ph.D., PRAPEE SRETARUGSA, Ph.D., MALEEYA KRUATRACHUE, Ph.D. 92 p. ISBN 974-665-037-8

Saccostrea forskali is an abundant dioecious bivalve species found along the coast of Thailand. The gonads are situated in the visceral mass between the digestive gland and the mantle. The aims of this thesis were to study the histology of the testis, ultrastructural characteristics and the pattern of chromatin condensation in the male germ cells during spermatogenesis by light and transmission electron microscopy. It was found that the outer gonadal walls of *S. forskali* consisted of fibro-muscular tissue forming the capsule-like structures. Parts of these capsules extended inward to form branching sheaths of connective tissue that partitioned the gonads into discrete follicles. The germinal epithelium of each follicle consisted of undifferentiated gonial cells lying close to the follicular basement membrane, and these cells developed into spermatocytes that moved toward the center of each follicle. The spermatogenetic processes in male germ cells could be classified into 15 stages based on the cell size and the patterns of chromatin condensation. There were two stages of spermatogonia whose nuclei contained mostly euchromatin and prominent nucleoli. Six stages of primary spermatocytes were leptotene (LSc), zygotene (ZSc), pachytene (PSc), diplotene (DSc), diakinesis (DiSc), and metaphase (MSc) primary spermatocytes. From LSc to DSc the 30-nm fibers were condensed into increasingly larger heterochromatin blocks and cords that eventually became chromosomes in DiSc and MSc. The latter gave rise to secondary spermatocyte (SSc) containing reticulated chromatin pattern. Four stages of spermatids comprised spermatid I (St_1), spermatid II (St_2), spermatid III (St_3), and spermatid IV (St_4). St_1 was divided by continuous transition from SSc. It contained a small amount of euchromatin among dense patches of heterochromatin that were thickened and condensing further in St_2. St_3 and St_4 contained highly condensed blocks of heterochromatin, leaving only a few small white patches of euchromatin. The heterochromatin in spermatids also occurred by the tight packing of 30-nm fibers, and all 10-nm fibers were transformed to 30-nm fibers in St_2. Finally, two stages of spermatozoa consisted of immature and mature spermatozoa which contained barrel-shaped heads covered with cup-like acrosome with subacrosomal space containing crystalline axial rod. The tail consisted proximally of perpendicular centrioles that were surrounded by four mitochondria and distally with the axoneme surrounded by the plasma membrane.