（学位第３号様式）

学 位 論 文 要 旨

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題　目	The cuticle ultrastructure of Aphelenchoididae nematodes (Aphelenchoididae 科線虫の角皮微細構造)

The nematode cuticle structure is extremely variable, not only among different taxa but also between sexes and across the developmental stages within a species. Therefore, the cuticle, flexible exoskeleton, appears to be an important factor for nematode's great capacity to adapt to various environments. However, we hardly understand what meaning the cuticle structural differences have. On the contrary, we do not know whether each cuticle structure really reflects each life history or not. This is mainly because the relationship between the cuticle structure and the biological trait is unclear. The purpose of this study is to clarify the relationship between cuticle ultrastructure and physiological and ecological traits in aphelenchoidid nematode family. First, I examined cuticle structures of two inbred strains of *Bursaphelenchus xylophilus*, the pine wood nematode, differing of chemical resistance (oxidative stress tolerance). This measurement showed that the inbred strain which shows high chemical resistance had thicker cuticle than the other inbred strain. However, there is no structural difference in cuticles among strains; both cuticles consisted of four parts: a triple-layered epicuticle, electron-lucent cortical and median zones, and a radially striated basal zone. Next, I examined cuticle structures of various Aphelenchoididae species and associated the structures with their ecological traits. As a result, the cuticle structure of seven mycophagous species, which are thought to be ancestral species among this family, were largely similar (except *Parasitaphelenchus costati* females) with *B. xylophilus*. On the other hand, sedentary insect/plant parasitic species and *P. costati* females lost/reduced radially striation in basal zone. In addition, *P. costati* female had less developed body wall muscle. Considering these results and their life histories, the changes of basal striation seem to reflect the loss of mobility. In addition, osmophilic zone emerged in cuticle median zone in predator species. The specific median zone was hypothesized to give cuticle flexibility and protect predator species from cannibalism. On the whole, the changes of cuticle structure (changes of radially striation in basal zone and appearance of osmophilic median zone) appear to reflect their own life histories.