Studies on changes in diagnostic markers for metabolic disorders in healthy cats with aging

Abstract of doctoral thesis

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In our country, super-aging society is expanding at a speed that is so fast that we don't see it in the world. Non-communicable diseases (NCDs) such as obesity, diabetes and cancer have increased with progress of super-aging society. In recent years, the life span of dogs and cats has significantly extended and the number of age-related diseases of animals as well as human is increasing, and it is necessary to respond from a different viewpoint from conventional veterinary medicine. Therefore, the new animal medical systems that the preventive medical care for animals for individuals by early diagnosis and treatment is marked for NCDs. It is necessary to develop appropriate diagnostic markers for the early diagnosis with aging. It is necessary to investigate changes in diagnostic markers in healthy cats with aging because these markers change with aging. The subject were 67 clinically healthy cats (10 months to 16 years and 9 months old, 25 females, 42 males) that were divided into 5 groups with age. It was clarified that the weight and BCS increased with aging, and glucose (GLU), triglyceride (TG), albumin (ALB), malate dehydrogenase/lactate dehydrogenase (M/L) ratio, serum amyloid A (SAA), AMP activated protein kinase (AMPK) in serum changed with aging. It is suggested that healthy cats decrease energy metabolism on lipid metabolism with aging. From this result, GLU, TG, ALB, M/L, AMPK, SAA, and ADN were useful markers for detecting early small changes in metabolic diseases. It is necessary to be changed standard value of the marker with aging because energy metabolism changes with aging. We attempted to establish standard value with aging for TG, ADN, SAA, and M/L ratio related to lipid metabolism by study so far. As a result, it was suggested that early diagnosis of hyperlipidemia, obesity, and associated diseases may be possible. In addition, AMPK activity is also one of the markers to attend in the future that decreases with aging and lead to an extension of lifespan. In the future, it will be necessary to set more accurate standard values by

accumulating various data and to attend other markers such as immunity. It is possible to apply this initiative to human with a declining birthrate and an aging population.