



Oral Presentation

The role of microRNAs on aging

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Abstract

MicroRNAs (miRNAs) are endogenous non-protein-coding RNAs, 19-23 nucleotides long, that are transcribed from evolutionarily conserved regions in the gene. miRNAs were first discovered by Lee et al. in 1993 from a nematode, *Caenorhabditis elegans*. The first miRNA is called Lin-4. They either prevent translation by partially binding to the target mRNA, or silence gene expression by cutting target genes. They have effects on cell proliferation, development, differentiation, metabolism, intercellular signal transduction and apoptosis. In addition, there is increasing evidence that miRNAs play an important role in the development, progression and prognosis of numerous diseases, including tumorigenesis. At the same time, miRNAs play an important role in the aging process, as in many biological mechanisms. Although the aging process occurs under many factors, miRNAs also have important effects on how this process will occur among individuals. One of the possible causes of aging, which is thought to be valid in all vertebrates, is the accumulation of iron molecules in nerve cells. As a result of research, scientists found that this iron accumulation is linked to a miRNA called "miR-29". In this study, where Alessandro Celileno's team used *Nothobranchius Furzeri*, a fish species in Africa, a large amount of iron accumulation was observed in nerve cells when they inhibited the activity of miR-29 molecule, which is known to cause early brain aging. They also revealed that young fish had more miR-29 molecules in their nerve cells when compared to those of aging fish. Therefore, it was concluded that miR-29 molecule acts as an anti-aging molecule and prevents iron accumulation in nerve cells. Although studies have been conducted on the effect of miRNAs on the aging process in human, as far as we know, no studies have been conducted on cats or dogs yet. Since the life span of dogs and cats is shorter than human and they are exposed to the same environmental factors, cat/dog aging studies may create a suitable model for humans.

Keywords: miRNA, disease, nerve cell, aging

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