

# **Novel psychological and behavioral effect of vitamin K in older adults; molecular biological and epidemiological approach**

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Vitamin K is a fat-soluble vitamin which was discovered as a factor necessary for blood coagulation. Epidemiological studies revealed that vitamin K insufficiency was shown to be related with some aging-related diseases such as osoteoporosis and osteoarthritis. We have conducted a epidermiological study and reported that insufficient vitamin K intake is related with cognitive impairment, frailty, and depressive symptoms. We performed cross-sectional study based on independent cohort of community-dwelling older people and verified the reltiahship between vitamin K insufficiency and depressive symptoms. As for mechanism of vitamin K action, a lot of questions remain to be elucidated. We are searching for new candidates of vitamin K-biniding proteins. We are also interested in self-carboxylation of gamma-glutamyl carboxylase (GGCX) which is an important enzyme for vitamin K function. The biological significance of carboxylation of GGCX is under investigation. We aim to clarify novel function of vitamin K in the nevous system which can explain the results of our epidemiological studies.