

Paper Category:	Basic Science
Paper Title: (Arial Font; 14 Pt Size)	Dual transcriptome analysis identified novel age-related myokine
Abstract Body: (Arial Font; 12Pt Size)	<ul style="list-style-type: none"> • Background • Objectives • Method • Results • Discussions and Conclusions
<p>(Maximum word limit - 300 words)</p> <p>[Background] Myokine is muscle-derived physiologically active substance and regulates homeostasis in distal organs in addition to local skeletal muscle. Recent studies indicated possible relationship between myokines and age-related diseases such as sarcopenia. However, known myokines are not enough to completely connect between onset/exacerbation of sarcopenia and muscle-derived humoral factors.</p> <p>[Objectives] In this study, we aimed to identify novel myokine(s) associating with muscle aging and sarcopenia using dual transcriptome analysis combined with spatial RNA sequencing.</p> <p>[Methods] Skeletal muscles from both young (2-months) and aged (28-31 months) mice were used for two kinds of transcriptome analysis, conventional and spatial RNA sequencings. Following identification of age-related differentially expressed genes (ag-DEGs), expression analysis was performed in mouse and human muscle samples. Additionally, we investigated using human myogenic cell line whether ag-DEG protein was secreted from human muscle.</p> <p>[Results] We identified hundreds of ag-DEGs in mouse fast muscle by two different transcriptome analysis. Among these ag-DEGs, we particularly focused on <i>Amy1</i>, which encodes salivary amylase, because this gene was highly ranked humoral factor in DEGs. <i>Amy1</i> expression was increased in muscles of both aged mice and older adults. Also, spatial transcriptome analysis demonstrated that <i>Amy1</i> expression was increased in entire surface of muscle cross section from aged mice. Furthermore, we found that amylase and its activity were confirmed in a culture supernatant from human myotubes.</p> <p>[Discussions and Conclusions] Our findings strongly suggest that muscle-derived (M-) amylase acts as a novel age-related myokine, although further experiments are needed to clarify its function as myokine. Because major role of amylase is glycogen metabolism, M-amylase might work together with other glycogen storage organs such as liver and brain.</p>	

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