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漢方腎気概念の検討—漢方補腎薬が有する 抗サルコペニア効果の分子機序の解明

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要旨：サルコペニアは、加齢に伴う筋力の低下・筋肉量の減少を意味し、寝たきりを引き起こす重要な因子として注目されているが、有効な治療手段は開発されていない。代表的な補腎剤である牛車腎気丸が、腰痛・脚弱などの症状に用いられてきたことから、我々は、サルコペニアを腎虚の一症状と考え、老化促進マウスは腎虚モデルマウスであると仮説を立て、牛車腎気丸を投与し老化促進マウスの骨格筋への作用を検討した。老化促進マウスでは、サルコペニアに特徴的である筋萎縮と線維化、速筋の減少を認め、サルコペニアモデルとして適切であることが確認された。牛車腎気丸を服用させると筋萎縮が改善され、その作用機序として、インスリン/IGF-1 シグナルの改善・ミトコンドリア機能の回復・TNF- α の産生低下が関与していた。牛車腎気丸は、抗サルコペニア効果を有し、漢方腎気概念を分子レベルで解明していくことが、今後のサルコペニア治療手段の開発に有用と考えられる。

索引用語：サルコペニア，老化促進マウス，腎虚，牛車腎気丸

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Goshajinkigan (GJG), a traditional Japanese medicine, is a promising drug against sarcopenia

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Abstract: Sarcopenia, which is noted to be a cause of bedridden status currently, is characterized by age-related skeletal muscle atrophy and reduced muscle strength. However, no medical treatment is available for sarcopenia. Goshajinkigan (GJG) is the most famous anti-aging traditional Japanese medicine (kampo medicine) that is used to alleviate various age-related symptoms, especially motor disorders. Here, we investigated the effect of GJG on aging-associated skeletal muscle atrophy by using senescence-accelerated mice (SAMP8). We showed that GJG significantly reduced the loss of skeletal muscle mass and ameliorated the increase in slow skeletal muscle fibers in SAMP8 mice compared to control mice. GJG improved the phosphorylation of insulin/IGF-1 signal transduction and increased the expression of the mitochondrial-related transcription factors such as PGC-1 α . In addition GJG suppressed the expression of TNF- α . We demonstrate that GJG has a therapeutic effect against sarcopenia. Targeting the molecular mechanism of GJG against sarcopenia is a promising approach for drug development of sarcopenia.

Key words: Sarcopenia, SAMP8, aging, Goshajinkigan (GJG)

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