

عنوان مقاله:

Motherwort (*Leonurus japonicus* Houtt.) extends the lifespan and healthspan of *Caenorhabditis elegans* via sir-2.1 and daf-16 activation

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خلاصه مقاله:

**Introduction:** As a traditional medicine, the aerial parts of *Leonurus japonicus* Houtt. (Lamiaceae), aka motherwort, have been extensively used to treat gynecological diseases. The current study was designed to investigate the longevity properties of the methanolic extract of *L. japonicus* (MLJ) using *Caenorhabditis elegans* model system. **Methods:** The longevity effect of MLJ was determined by lifespan assay. Lipofuscin accumulation, thermotolerance, and body movement were measured to test the effects on the healthspan. The antioxidant capacity of MLJ was investigated by analyzing antioxidant enzyme activities, intracellular reactive oxygen species (ROS) levels, and the survival rate against oxidative stress conditions. Pharyngeal pumping rate and body length were observed to determine the effect of MLJ on aging-related factors. Transcriptional activity of daf-16 was observed under fluorescence microscopy using a transgenic mutant carrying DAF-16::GFP transgene. **Results:** MLJ could significantly prolong the median and maximum lifespan of worms. In addition, MLJ reduced the accumulation of lipofuscin in aged worms and delayed the age-dependent decrease in locomotion and thermotolerance suggesting its beneficial role in the healthspan. Also, MLJ increased the stress resistance of worms against oxidative stress and decreased intracellular ROS generation by up-regulating the activities of antioxidant enzymes. Additional genetic studies showed that MLJ failed to prolong the lifespan of worms lacking daf-2, age-1, daf-16, and sir-2.1 genes. Moreover, in the presence of MLJ, the nuclear translocation of daf-16 was significantly increased. **Conclusion:** Collectively, our results demonstrate that the anti-aging properties of MLJ might be attributed to sir-2.1 and insulin/IGF signaling-dependent daf-16/FOXO activation.

کلمات کلیدی:

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