

Search and identification of active ingredients in Chlorella hot water extract

Monoamines

extend the Lifespan of Sod1 Mutant Drosophila melanogaster

Inclusive in Journal of Food Bioactives

[Research objective].

Chlorella has been reported not only as a source of folic acid, vitamin B12, and lutein but also as a functional agent working as such anti-inflammatory, antioxidant and reduced arterial stiffness. However, there have been few studies on the functional components contained in Chlorella. Previous studies have confirmed that Chlorella hot water extract prolongs the life span of Sod1 mutant flies with reduced capacity to remove reactive oxygen species, but the active substances were unknown. Therefore, a study was conducted to search for and identify the active ingredients contained in the chlorella hydrothermal extract.

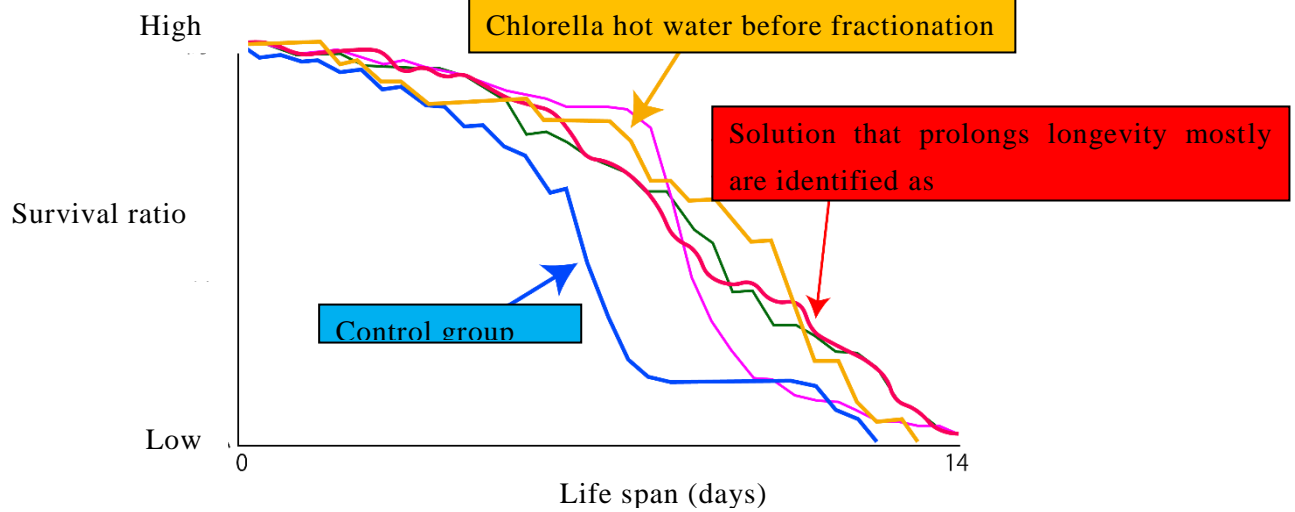
[Test method]

Chlorella hydrothermal extract was separated into solutions containing the active ingredient by chemical methods (fractionation). The resulting fractionated solution was pulverized by a lyophilization method and fed to Sod1 mutant Drosophila to determine which fractionated solution contained the active ingredient that prolonged life. The active ingredient containing the amino group was then marked to identify the active ingredient.

[Results]

Chlorella hydrothermal extract and its fractionated solution extended life significantly compared to Drosophila fed with water. It was found that the fractionation solution with the longest life span contained a plurality of monoamines, which are amino acids. Monoamines alone have been shown to extend Drosophila longevity in amounts contained in Chlorella hot water extracts. These results demonstrate that the chlorella hot water extract extends the lifespan of Sod1 mutant flies and that at least some of its active components are monoamines.

Exploration image diagram of Drosophila lifespan extension test results with chlorella hot water extract and fractionated solution



Details

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Title: Identification of a compound, at a very low dose (less than 100 ng/g of diet), with lifespan-elongation activity towards SOD-1 mutant adults of *Drosophila melanogaster* in the hot water extract of *Chlorella pyrenoidosa*

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