

Supplementary Information

Effects on longevity extension and mechanism of action of carnosic acid in *Caenorhabditis elegans*

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1. The properties of the mutants used in the study were as follows:

(1) The *daf-16(mgDf50)* null mutant strain lacks the fork- head family transcription factor that is regulated by the IIS pathway.

(2) CF1553 {*muIs84 [pAD76 (sod-3::gfp)]*} is a transgenic GFP reporter strain that could reflect the level of *sod-3*, encoding a manganese superoxide dismutase in *C. elegans*.

(3) AM140 {*rmIs132[P(unc-54) Q35::YFP]*} drives Q35::YFP expression via the myosin promoter of myoblast myocytes and expresses the polyQ repeat expansion mutation of the YFP fusion in somatic muscle cells.

(4) CL4176 {*dvIs2[pCL12(unc-54/human A β ₁₋₄₂ minigene)lpRF4]*} drives A β micro gene expression of A β ₁₋₄₂ via the myosin promoter of myoblast muscle cells.

(5) The *skn-1(zu67) IV/nT1(IV;V)* null mutant strain lacks SKN-1 transcription factor, which is responsible for the expression of various stress genes promoting oxidative stress resistance.

(6) The *hsf-1(sy441)I* null mutant strain lacks heat-shock transcription factor which can mediate enhanced ascaroside pheromone biosynthesis in response to heat stress by activating the peroxisomal fatty acid β -oxidation genes.

2. Supplementary Table

Table S1 Primer sequences for qRT-PCR analysis

Gene	Primer
<i>hsp-16.1</i>	CTGAATCTTCTGAGATTGTAAAC (F)
	TTTGTTCAACGGGCGCTTGC (R)
<i>hsp-16.2</i>	CTGCAGAATCTCTCCATCTGAGTC (F)
	AGATTCGAAGCAACTGCACC (R)
<i>sod-3</i>	CCAACCAGCGCTGAAATTCAATGG (F)
	GGAACCGAAGTCGCGCTTAATAGT (R)
<i>sod-5</i>	GAACTGCTGTCTTCGGAAGT (F)
	CCATGAAGTCCTGGTGACAAT (R)
<i>daf-2</i>	GGATAAAGGCGAATCAAAGTGTC (F)
	CGATACACTTCCCTTGTGATAGAC (R)
<i>daf-16</i>	CTTCAAGCCAATGCCACTACC (F)
	GGAGATGAGTTGGATGTTGATAGC (R)
<i>hsf-1</i>	TTGACGACGACAAGCTTCCAGT (F)
	AAAGCTTGCACCAGAATCATCCC (R)
<i>skn-1</i>	GACGTCAATTTATGGAGTGTCG (F)
	GAAGATGTTTTGTCGTGATCCG (R)
<i>sek-1</i>	TTATGGAGCAGGCAAGAAATG (F)
	AAAGACTTGTCGCCATTCG (R)
<i>act-1</i>	TCCAAGAGAGGTATCCTTAC (F)
	CGGTTAGCCTTTGGATTGAG (R)