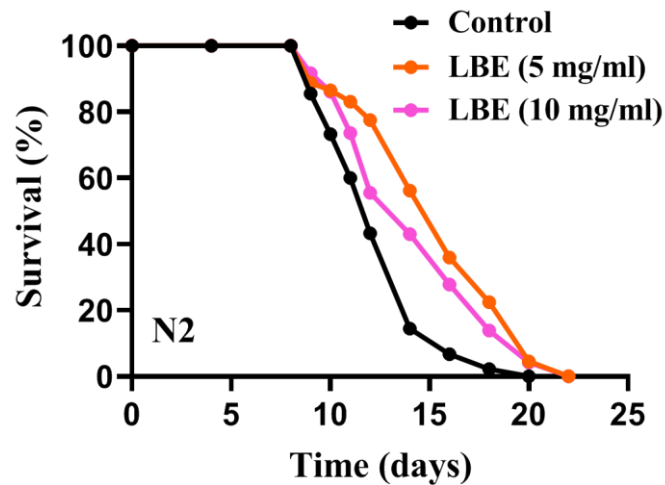
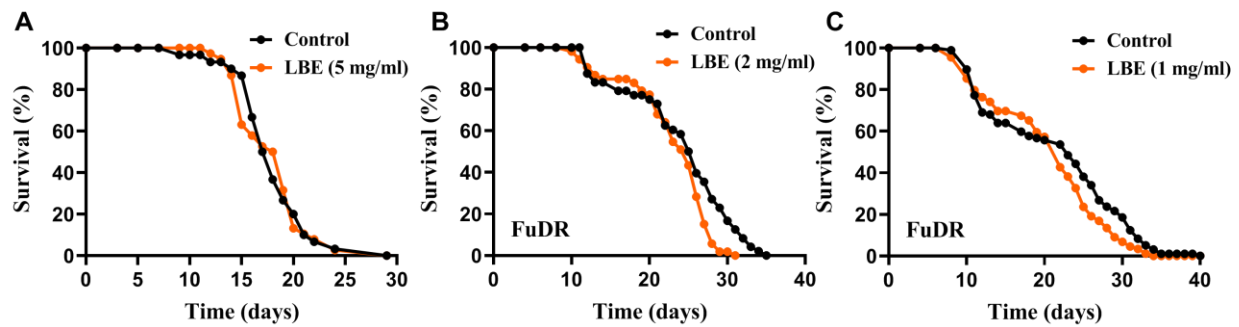


Supplementary Material

1 Supplementary Figures



Supplementary Figure 1. LBE at 10 mg/ml had no better anti-aging effect than 5 mg/ml. Survival curves of N2 worms cultured under unfavorable conditions at 20°C with vehicle (5% water), 5 or 10 mg/ml LBE (control: n=90, mean lifespan 12.5 days; 5 mg/ml LBE: n=89, mean lifespan 15.5 days, $P<0.0001$ v.s. control; 10 mg/ml LBE: n=72, mean lifespan 13.6 days, $P=0.081$ v.s. 5 mg/ml LBE). LBE, total water extracts of *L. barbarum* berry.



Supplementary Figure 2. LBE had no lifespan extension effect on worms with mean lifespan more than 17 days. (A) Survival curves of N2 worms treated with vehicle or 5 mg/ml LBE at 20°C (control: n=30, mean lifespan 17.9 days; 5 mg/ml LBE: n=38, mean lifespan 17.8 days, $P=0.861$). (B) Survival curves of N2 worms treated with vehicle or 2 mg/ml LBE at 20°C (control: n=48, mean lifespan 24.0 days; 5 mg/ml LBE: n=53, mean lifespan 22.8 days, $P=0.016$). (C) Survival curves of N2 worms treated with vehicle or 1 mg/ml LBE at 20°C (control: n=97, mean lifespan 21.2 days; 5 mg/ml LBE: n=89, mean lifespan 20.3 days, $P=0.041$). LBE, total water extracts of *L. barbarum* berry.

2 Supplementary Tables

Supplementary Table 1. Lifespan analysis of N2 worms treated with LBP at concentrations of 300 µg/ml, related to Figure 1A and B.

Genotype	Condition	Mean lifespan (Days)	Std error (Days)	No. total	No. dead	No. censored	Culturing temperature	Mean lifespan extention (%) vs ctrl	Log rank test (<i>P</i> -value) vs ctrl
N2	Control	17.8	0.4	80	71	9	20°C		
	LBP (300 µg/ml)	17.3	0.5	80	71	9	20°C	-2.81	0.864
N2	Control	9.7	0.3	130	89	41	25°C		
	LBP (300 µg/ml)	9.7	0.3	130	108	22	25°C	0	0.898
N2	Control	13.0	0.7	50	23	27	20°C		
	LBP (300 µg/ml)	12.5	0.7	50	22	28	20°C	-3.84	0.678

Supplementary Table 2. Lifespan analysis of N2 worms treated with LBE at concentrations of 1, 2 and 5 mg/ml, related to Figure 2B.

Genotype	Condition	Mean lifespan (Days)	Std error (Days)	No. total	No. dead	No. censored	Culturing temperature	Mean lifespan extention (%)	Log rank test (<i>P</i> -value) vs ctrl
N2	Control	11.8	0.5	114	49	65	20°C		
	LBE (1 mg/ml)	12.6	0.5	113	51	62	20°C	6.78	0.428
	LBE (2 mg/ml)	13.5	0.4	113	91	22	20°C	14.41	0.011
	LBE (5 mg/ml)	16.3	0.6	88	68	20	20°C	38.14	<0.0001
N2	Control	13.9	0.5	115	72	43	20°C		
	LBE (1 mg/ml)	14.1	0.4	114	94	20	20°C	1.44	0.703
	LBE (2 mg/ml)	16.2	0.5	118	71	47	20°C	16.55	0.002
	LBE (5 mg/ml)	18.7	0.4	118	99	19	20°C	34.53	<0.0001

Supplementary Table 3. Lifespan analysis of N2 worms with different mean lifespan treated with LBE at 5 mg/ml, related to Figure 3.

Genotype	Condition	Mean lifespan (Days)	Std error (Days)	No. total	No. dead	No. censored	Culturing temperature	Mean lifespan extention (%) vs ctrl	Log rank test (<i>P</i> -value)
N2	Control	11.8	0.5	114	49	65	20°C		
	LBE (5 mg/ml)	16.3	0.6	88	68	20	20°C	38.14	<0.0001
N2	Control	13.9	0.5	115	72	43	20°C		
	LBE (5 mg/ml)	18.7	0.4	118	99	19	20°C	34.53	<0.0001
N2	Control	13.1	0.2	153	62	91	20°C		
	LBE (5 mg/ml)	18.8	0.5	158	90	68	20°C	43.51	<0.0001
N2	Control	12.5	0.3	163	90	73	20°C		
	LBE (5 mg/ml)	15.5	0.4	154	89	65	20°C	24.00	<0.0001
N2	Control	11.6	0.3	159	80	79	20°C		
	LBE (5 mg/ml)	15.5	0.4	160	82	78	20°C	33.62	<0.0001
N2	Control	11.3	0.2	150	110	40	20°C		
	LBE (5 mg/ml)	17.1	0.3	150	116	34	20°C	51.33	<0.0001
N2	Control	12.4	0.2	153	93	60	20°C		
	LBE (5 mg/ml)	15.1	0.3	153	125	28	20°C	21.77	<0.0001
N2	Control	14.0	0.4	80	44	36	20°C		

	LBE (5 mg/ml)	15.1	0.5	80	57	23	20°C	7.85	0.023
Genotype	Condition	Mean lifespan (Days)	Std error (Days)	No. total	No. dead	No. censored	Culturing temperature	Mean lifespan extention (%) vs ctrl	Log rank test (<i>P</i> -value)
N2	Control	15.3	0.2	150	108	42	20°C		
	LBE (5 mg/ml)	16.8	0.3	150	99	51	20°C	9.80	<0.0001
N2	Control	17.9	0.7	50	30	20	20°C		
	LBE (5 mg/ml)	17.8	0.5	50	38	12	20°C	-0.56	0.861

Supplementary Table 4. Lifespan analysis of N2 and mutant worms treated with LBE at 5 mg/ml under unfavorable conditions, related to Figure 4.

Genotype	Condition	Mean lifespan (Days)	Std error (Days)	No. total	No. dead	No. censored	Culturing temperature	Mean lifespan extention (%) vs ctrl	Log rank test (p-value) vs ctrl
N2	Control	11.6	0.3	159	80	79	20°C		
	LBE (5	15.5	0.4	160	82	78	20°C	33.62	<0.0001
<i>hsf-1(sy441)</i>	Control	9.7	0.2	164	72	92	20°C		
	LBE (5	11.1	0.2	167	97	70	20°C	14.43	<0.0001
<i>aak-2(ok524)</i>	Control	13.4	0.3	153	100	53	20°C		
	LBE (5	17.1	0.3	152	114	38	20°C	27.61	<0.0001
<i>daf-16(mu86)</i>	Control	10.8	0.2	150	86	64	20°C		
	LBE (5	16.6	0.4	150	90	60	20°C	53.70	<0.0001
<i>xbp-1(zc12)</i>	Control	12.7	0.3	165	61	104	20°C		
	LBE (5	17.3	0.4	163	80	83	20°C	36.22	<0.0001
<i>sir-2.1(ok434)</i>	Control	10.8	0.2	150	119	31	20°C		
	LBE (5	10.6	0.4	150	63	87	20°C	-1.85	0.981

Supplementary Table 5. Lifespan analysis of N2 and mutant worms treated with LBE at 5 mg/ml under favorable conditions, related to Figure 5.

Genotype	Condition	Mean lifespan (Days)	Std error (Days)	No. total	No. dead	No. censored	Culturing temperature	Mean lifespan extention (%) vs ctrl	Log rank test (p-value) vs ctrl
N2	Control	15.3	0.2	150	108	42	20°C		
	LBE (5	16.8	0.3	150	99	51	20°C	10.46	<0.0001
<i>hsf-1(sy441)</i>	Control	11.6	0.6	50	19	31	20°C		
	LBE (5	15.0	0.6	50	28	22	20°C	29.31	<0.0001
<i>aak-2(ok524)</i>	Control	16.8	0.4	120	74	46	20°C		
	LBE (5	16.1	0.5	120	68	52	20°C	-4.17	0.91
<i>daf-16(mu86)</i>	Control	16.3	0.5	120	70	50	20°C		
	LBE (5	15.1	0.6	120	58	62	20°C	-7.36	0.299
<i>xbp-1(ok434)</i>	Control	12.3	0.5	100	52	48	20°C		
	LBE (5	12.1	0.4	100	83	17	20°C	-1.63	0.819
<i>sir-2.1(ok434)</i>	Control	14.1	0.7	50	24	26	20°C		
	LBE (5	13.2	0.4	50	31	19	20°C	-6.38	0.113

Supplementary Table 6. Lifespan analysis of N2 and *hsf-1(sy441)* worms treated with indicated RNAi and/or LBE at 5 mg/ml, related to Figure 6.

Genotype	Condition	Mean lifespan (Days)	Std error (Days)	No. total	No. dead	No. censored	Culturing temperature	Mean lifespan extension (%) vs ctrl	Log rank test (p-value) vs ctrl
N2	l4440-control	19.2	1.0	60	45	15	20°C		
	l4440-LBE (5 mg/ml)	22.2	0.9	60	34	26	20°C	15.63	0.256
	<i>hsf-1</i> RNAi-control	8.9	0.2	60	42	18	20°C		
	<i>hsf-1</i> RNAi-LBE (5 mg/ml)	9.6	0.2	60	43	17	20°C	7.87	0.005
	<i>sir-2.1</i> RNAi-control	17.0	0.8	60	41	19	20°C		
	<i>sir-2.1</i> RNAi-LBE (5	16.6	0.7	60	39	21	20°C	-2.35	0.172
<i>hsf-1</i> (sy441)	<i>daf-16</i> RNAi-control	8.3	0.4	80	69	11	20°C		
	<i>daf-16</i> RNAi-LBE (5	9.9	0.3	80	58	22	20°C	19.28	0.018
	<i>sir-2.1</i> RNAi-control	9.6	0.5	80	71	9	20°C		
	<i>sir-2.1</i> RNAi-LBE (5	10.6	0.4	80	75	5	20°C	10.42	0.47

Supplementary Table 7. Lifespan analysis of GMC101 worms treated with indicated RNAi and/or LBE at 5 mg/ml, related to Figure 7.

Genotype	Condition	Mean lifespan (Days)	Std error (Days)	No. total	No. dead	No. censored	Culturing temperature	Mean lifespan extension (%) vs ctrl	Log rank test (p-value) vs ctrl
GMC101	l4440-control	15.3	0.7	60	32	28	20°C		
	l4440-LBE (5 mg/ml)	13.0	0.6	60	42	18	20°C	-15.03	0.051
	<i>hsf-1</i> RNAi-control	6.1	0.2	60	39	21	20°C		
	<i>hsf-1</i> RNAi-LBE (5 mg/ml)	11.7	0.4	60	50	10	20°C	92.80	<0.0001
	<i>sir-2.1</i> RNAi-control	15.0	0.5	60	37	23	20°C		
	<i>sir-2.1</i> RNAi-LBE (5	15.6	0.4	60	48	12	20°C	0.04	0.715