

Supplementary Online Content

Shu XO, Zheng Y, Cai H, et al. Soy Food Intake and Breast Cancer Survival. *JAMA*. 2009;302(22):2437-2443.

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Soy Protein Intake at 6 Months Post-Cancer Diagnosis by Demographic Characteristics, Clinical Predictors and Selected Lifestyle Factors: Shanghai Breast Cancer Survival Study

	Soy Protein Intake (quartiles, g/day)				P Value
	Q1(≤5.31) N=1254	Q2(5.32-9.45) N=1262	Q3(9.46-15.31) N=1256	Q4(>15.31) N=1260	
Age at diagnosis ($\bar{x} \pm SD$, year)	54.2±10.4	53.4±10.0	53.3±9.9	52.9±9.6	0.152 ^a
Crucifer intake ($\bar{x} \pm SD$, g/day)	60.4±42.1	68.3±44.6	76.5±57.0	92.5±59.7	<0.001 ^a
Meat intake ($\bar{x} \pm SD$, g/day)	200.2±113.4	212.0±111.8	217.7±105.3	245.0±128.4	<0.001 ^a
Red meat intake ($\bar{x} \pm SD$, g/day)	35.2±31.2	35.2±27.6	36.9±29.5	40.9±33.5	<0.001 ^a
White meat intake ($\bar{x} \pm SD$, g/day)	42.3±47.5	43.5±44.2	44.9±45.8	51.5±53.3	<0.001 ^a
Fish intake ($\bar{x} \pm SD$, g/day)	112.6±84.1	119.8±86.8	119.9±80.0	132.0±91.6	<0.001 ^a
BMI ($\bar{x} \pm SD$)	23.8±3.5	24.0±3.3	24.0±3.3	24.5±3.5	<0.001 ^a
Number of pregnancies ($\bar{x} \pm SD$)	2.5±1.4	2.5±1.4	2.5±1.4	2.4±1.4	0.468 ^a
Education level (%)					
None	5.0	3.1	3.7	3.3	
Primary school	9.1	7.5	7.5	7.4	
Middle or high school	70.2	73.4	72.4	73.4	
College and above	15.6	16.0	16.4	15.9	0.209
Income (%) ^b					
<700	28.1	27.7	27.6	28.1	
700-999	30.7	30.4	30.2	26.8	
1000-1999	30.3	28.9	30.4	33.0	
>2000	10.9	13.1	11.8	12.1	0.319
Post-menopausal (%)	52.6	51.4	49.4	50.9	0.454
Tamoxifen user (%)	53.0	52.7	53.3	49.5	0.202
ER status (%)					
Negative	33.8	35.3	35.4	36.3	
Positive	64.4	63.2	63.2	62.0	
Missing	1.8	1.5	1.4	1.7	0.854
PR status (%)					
Negative	40.1	40.9	39.3	42.1	
Positive	57.9	57.4	59.0	55.6	
Missing	2.0	1.7	1.7	2.3	0.625
TNM stage (%)					
0-I	37.2	37.5	35.4	35.7	
IIA	32.1	32.1	33.9	32.6	
IIB+	15.2	16.4	18.5	16.4	
III-IV	11.1	9.7	8.2	10.1	
Missing	4.3	4.3	4.0	5.2	0.316
Received chemotherapy (%)	89.2	91.1	91.9	92.5	0.026
Received radiotherapy (%)	32.9	32.9	33.6	29.1	0.061

eTable 1. Soy Protein Intake at 6 Months Post-Cancer Diagnosis by Demographic Characteristics, Clinical Predictors and Selected Lifestyle Factors: Shanghai Breast Cancer Survival Study (continued)

	Soy Protein Intake (quartiles, g/day)				P Value
	Q1(≤5.31) N=1254	Q2(5.32-9.45) N=1262	Q3(9.46-15.31) N=1256	Q4(>15.31) N=1260	
Received radical mastectomy (%)	90.7	92.2	93.6	93.8	0.009
Family history of cancer (%) ^c	5.4	5.6	6.6	6.6	0.459
Hormone therapy user (%) ^d	6.1	6.3	7.1	7.8	0.602
Regular smoker (%)	2.1	2.5	3.0	2.9	0.428
Regular alcohol drinker (%)	2.5	2.9	3.6	3.3	0.416
Regular tea drinker (%)	20.4	22.0	26.2	26.8	<0.001
Ginseng user (%)	13.6	13.9	13.9	15.9	0.296
Vitamin supplement use (%)	25.6	28.8	28.7	34.3	<0.001
Regular physical activity (%)	57.1	62.0	67.0	72.2	<0.001
Comorbidity score ≥1 (%)	21.2	19.6	18.6	20.2	0.424

^a Kruskal-Wallis test.

^b Unit: (Yuan renminbi/person/month), One US dollar =6.82 Yuan renminbi currently.

^c Family history of breast cancer or ovarian cancer.

^d Among post-menopausal women; refers to hormone use to alleviate symptoms of menopause.

eTable 2. Association of Soy Food Intake With Total Mortality and Recurrence by TNM Stage: Shanghai Breast Cancer Survival Study^a

Quartile of Intake	No. of Participants	Total Mortality		Recurrence/Breast Cancer-Specific Mortality	
		No. of Events	HR (95%CI)	No. of Events	HR (95%CI)
Stage 0, I, II, III and IV					
Soy protein					
≤5.31	1200	112	1[Reference]	132	1[Reference]
5.32-9.45	1208	91	0.80(0.61-1.04)	131	0.79(0.63-1.01)
9.46-15.31	1206	106	0.68(0.52-0.90)	122	0.65(0.51-0.84)
>15.31	1195	118	0.73(0.56-0.96)	132	0.71(0.56-0.90)
Isoflavones					
≤20.00	1201	113	1[Reference]	139	1[Reference]
20.01-36.50	1215	81	0.76(0.58-1.00)	113	0.86(0.68-1.09)
36.51-62.68	1200	117	0.73(0.56-0.96)	136	0.64(0.50-0.83)
>62.68	1193	116	0.81(0.62-1.06)	129	0.78(0.61-0.99)
Stage 0 and I					
Soy protein ^b					
≤5.31	467	16	1[Reference]	23	1[Reference]
5.32-9.45	473	14	0.65(0.31-1.38)	19	0.77(0.40-1.50)
9.46-15.31	445	13	0.79(0.38-1.64)	12	0.84(0.44-1.62)
>15.31	450	13	0.78(0.37-1.65)	17	0.79(0.40-1.55)
Isoflavones ^c					
≤20.00	460	16	1[Reference]	23	1[Reference]
20.01-36.50	484	11	0.96(0.45-2.05)	19	0.88(0.46-1.70)
36.51-62.68	454	18	1.01(0.48-2.12)	12	0.86(0.45-1.66)
>62.68	437	11	0.96(0.44-2.10)	17	0.84(0.43-1.67)
Stage II					
Soy protein					
≤5.31	594	50	1[Reference]	61	1[Reference]
5.32-9.45	612	41	1.23(0.84-1.81)	71	0.97(0.70-1.35)
9.46-15.31	658	72	0.98(0.66-1.45)	80	0.74(0.52-1.04)
>15.31	618	61	0.97(0.65-1.45)	65	0.73(0.52-1.04)
Isoflavones					
≤20.00	607	51	1.0	69	1.0
20.01-36.50	608	38	0.88(0.59-1.30)	59	0.89(0.64-1.24)
36.51-62.68	631	70	0.96(0.66-1.40)	82	0.70(0.50-0.99)
>62.68	636	65	1.02(0.69-1.49)	67	0.77(0.55-1.09)

eTable 2. Association of Soy Food Intake With Total Mortality and Recurrence by TNM Stage: Shanghai Breast Cancer Survival Study (continued)^a

Quartile of Intake	No. of Participants	Total Mortality		Recurrence/Breast Cancer-Specific Mortality	
		No. of Events	HR (95%CI)	No. of Events	HR (95%CI)
Stage III and IV					
Soy protein					
≤5.31	139	46	1[Reference]	48	1[Reference]
5.32-9.45	123	36	0.51(0.32-0.82)	41	0.58(0.37-0.89)
9.46-15.31	103	21	0.45(0.28-0.74)	30	0.56(0.35-0.89)
>15.31	127	44	0.48(0.31-0.76)	50	0.63(0.41-0.95)
Isoflavones					
≤20.00	134	46	1[Reference]	47	1[Reference]
20.01-36.50	123	32	0.63(0.40-1.00)	39	0.79(0.52-1.21)
36.51-62.68	115	29	0.46(0.28-0.76)	37	0.53(0.33-0.86)
>62.68	120	40	0.54(0.34-0.87)	46	0.75(0.49-1.15)

Abbreviations: CI, confidence interval; HR, hazard ratio.

^a Soy food intake was treated as a time-dependent variable. Hazard ratios were adjusted for age at diagnosis, chemotherapy, radiotherapy, type of surgery received, body mass index, menopausal status, ER and progesterone receptor status, tamoxifen use, education level, income, cruciferous vegetable intake, total meat intake, vitamin supplement use, tea consumption, and physical activity.

^b Soy protein intake is presented in grams/day.

^c Soy isoflavone intake is presented in milligrams/day.

P values for interaction between soy food intake and TNM stage were as follows: for soy protein intake, P=.15 for total mortality and P=.90 for recurrence or breast cancer-specific mortality; for isoflavone intake, P=.08 for total mortality and P=.97 for recurrence or breast cancer-specific mortality.

eTable 3. Association of Soy Food Intake With Total Mortality and Recurrence by Menopausal Status at Cancer Diagnosis: Shanghai Breast Cancer Survival Study^a

Quartile of Intake	No. of Participants	Total Mortality		Recurrence/Breast Cancer Specific Death	
		No. of Events	HR (95% CI)	No. of Events	HR (95%CI)
Premenopausal Women					
Soy protein ^b					
≤5.31	594	43	1[Reference]	58	1[Reference]
5.32-9.45	613	42	0.86(0.58-1.27)	62	0.81(0.57-1.15)
9.46-15.31	635	48	0.61(0.40-0.93)	62	0.64(0.44-0.92)
>15.31	618	53	0.69(0.46-1.04)	60	0.69(0.49-0.98)
Isoflavones ^c					
≤20.00	585	44	1[Reference]	58	1[Reference]
20.01-36.50	612	35	0.83(0.56-1.24)	53	0.84(0.59-1.19)
36.51-62.68	631	51	0.57(0.37-0.89)	66	0.52(0.36-0.77)
>62.68	632	56	0.78(0.52-1.16)	65	0.77(0.55-1.09)
Postmenopausal Women					
Soy protein					
≤5.31	660	74	1[Reference]	79	1[Reference]
5.32-9.45	649	53	0.73(0.51-1.03)	74	0.77(0.56-1.06)
9.46-15.31	621	64	0.85(0.60-1.20)	66	0.75(0.54-1.04)
>15.31	642	67	0.72(0.51-1.03)	73	0.69(0.49-0.96)
Isoflavones					
≤20.00	671	75	1[Reference]	86	1[Reference]
20.01-36.50	647	48	0.69(0.48-0.99)	63	0.88(0.64-1.21)
36.51-62.68	627	72	0.97(0.70-1.36)	75	0.80(0.58-1.11)
>62.68	627	63	0.81(0.57-1.16)	68	0.78(0.55-1.08)

Abbreviations: CI, confidence interval; HR, hazard ratio.

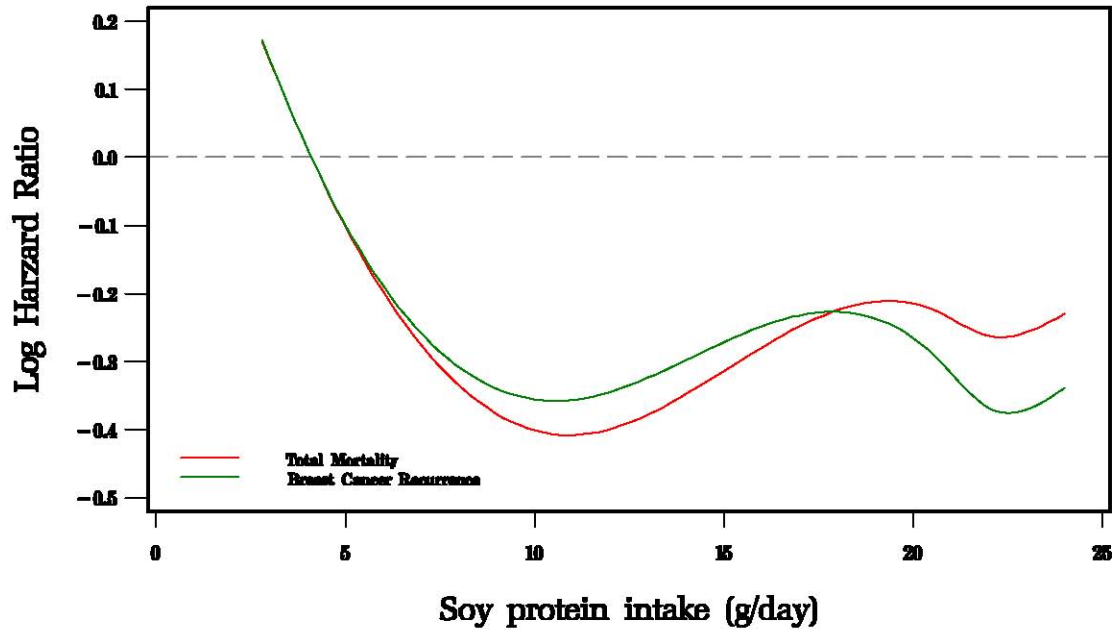
^a Soy food intake was treated as a time-dependent variable. Hazard ratios were adjusted for age at diagnosis, TNM stage, chemotherapy, radiotherapy, type of surgery received, body mass index, ER and progesterone receptor status, tamoxifen use, education level, income, cruciferous vegetable intake, total meat intake, vitamin supplement use, tea consumption, and physical activity.

^b Soy protein intake is presented in grams/day.

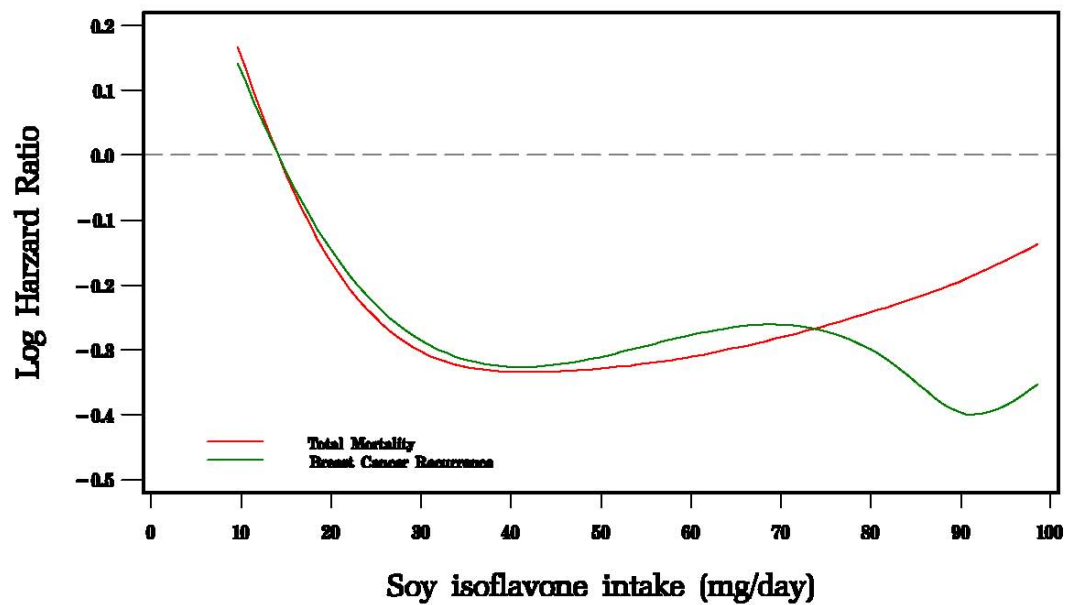
^c Soy isoflavone intake is presented in milligrams/day.

P values for interaction between soy food intake and menopausal status were as follows: for soy protein intake, P= 0.39 for total mortality and P=.74 for recurrence or breast cancer-specific mortality; for isoflavone intake, P= .06 for total mortality and P=.22 for recurrence or breast cancer-specific mortality.

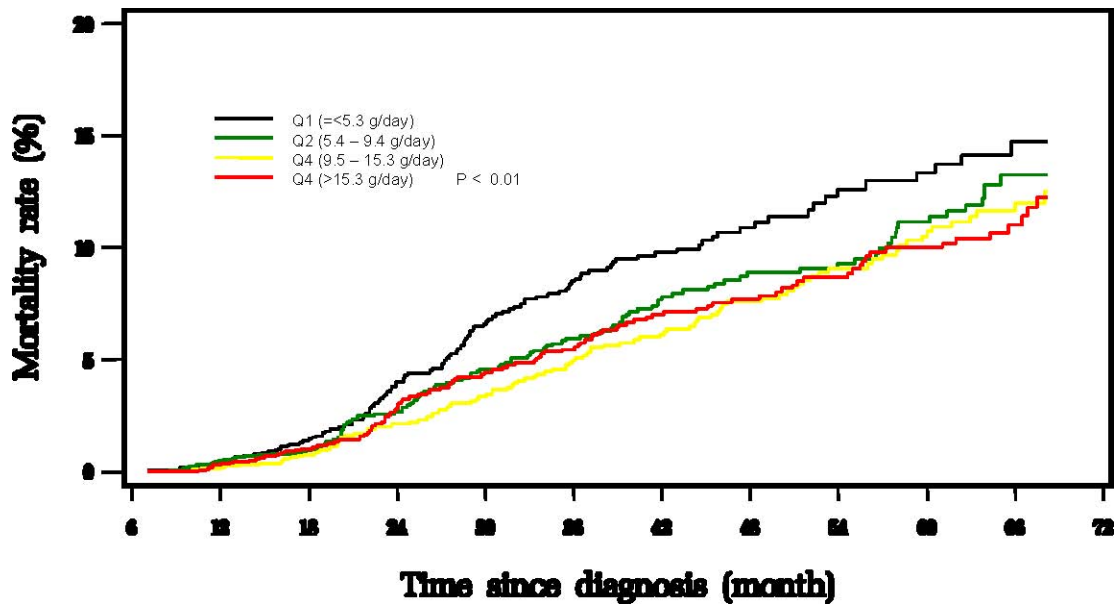
eFigure 1. Association Pattern for Soy Protein Intake and Breast Cancer Outcomes: Shanghai Breast Cancer Survival Study, 2002-2009



eFigure 2. Association Pattern for Soy Isoflavone Intake and Breast Cancer Outcomes: Shanghai Breast Cancer Survival Study, 2002-2009



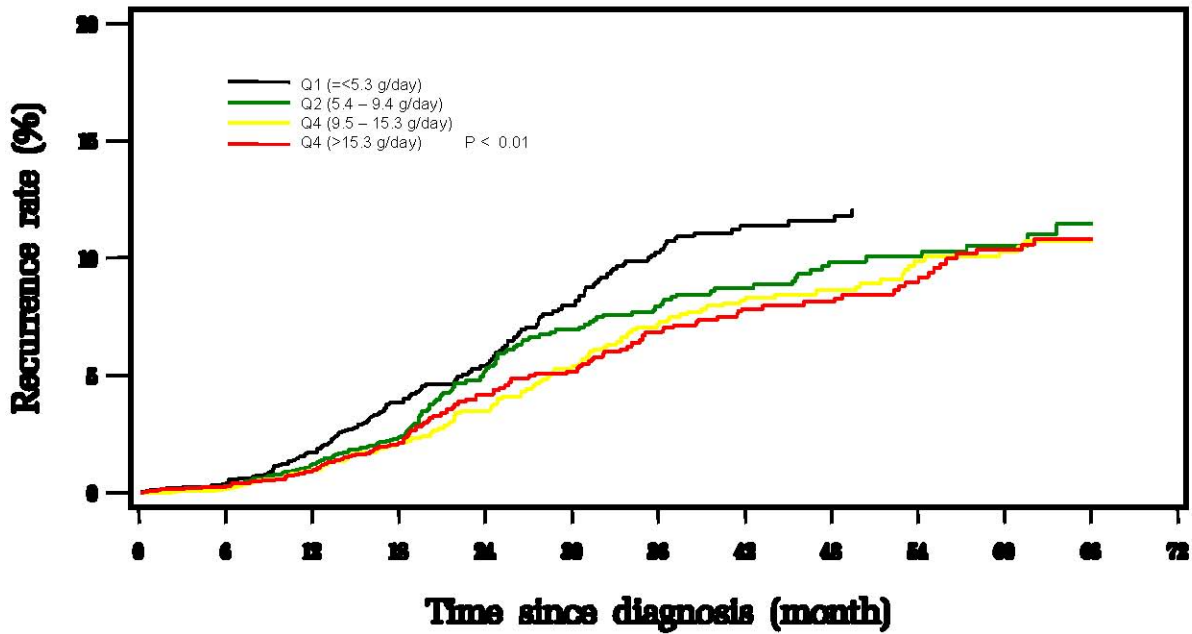
eFigure 3. Total Mortality by Soy Protein Intake: Shanghai Breast Cancer Survival Study, 2002-2009



P<0.01 for highest vs lowest intake

Soy protein intake	6 months from diagnosis subjects at risk	7-18 months from diagnosis death/subjects at risk	19-36 months from diagnosis death/subjects at risk
Q1	1254	24/1230	67/1163
Q2	1262	21/1241	45/1196
Q3	1256	18/1238	53/1185
Q4	1260	28/1232	45/1187

eFigure 4. Breast Cancer Recurrence by Soy Protein Intake: Shanghai Breast Cancer Survival Study, 2002-2009



P<0.01 for highest vs lowest intake

Soy protein intake	Six months from diagnosis recurrence/still at risk	7-18 months from diagnosis recurrence/subjects at risk	19-36 months from diagnosis recurrence/subjects at risk
Q1	1245	72/1173	60/1113
Q2	1259	65/1194	45/1149
Q3	1253	55/1198	57/1141
Q4	1255	55/1200	50/1150