# The Associations of Soy Intakes with Non-communicable Diseases: A Scoping Review of Meta-Analyses

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# Appendix A1: Excluded studies

Afshin et al. (1): exclusion of studies focused on soy, soy milk, or soybean oil.

Anderson et al. (2): not meta-analysis

Ding et al. (3): not meta-analysis

Dong and Qin (4): included studies of Urinary genistein, Plasma genistein

Fritz et al. (5): no meta-analysis

Goodman et al. (6): no meta-analysis

He and Chen (7): no-meta-analysis

Ishimi et al.(8): included studies of ingesting soy isoflavones

Issac(9): inappropriate methods for statistical combination of results, confusing risk with mortalities, low AMSTAR 2 score 5.5/16

Jian(10): no meta-analysis

Messina(11) not a systematic review

Nagata et al.(12): no meta-analysis

Otun et al.(13): outcome biomarker: thyroid hormone levels

Tang et al.(14): soy milk, and tofu

Trock et al.(15): study estimated soy protein based on urinary Isoflavone levels

Wu and Liu(16): included dietary intake of total isoflavones

Yang et al.(17): Duplicate

You et al.(18): dietary isoflavones

Zhao et al.(19): Isoflavone-rich food

Appendix A2: Selecting the best meta-analysis studies for the significant associations of total soy intakes with non-communicable diseases: high vs. low intakes

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Incidence | Case/cohort (n) | Included study publication years | RR (95% CI) | Heterogeneity,  I2 %, p | Sources | AMSTAR score Max.=16 | Conclusion | Selected best study | |
| Cancer | 8 | 2002-2014 | Nonsignificant |  | Namazi et al.(20) | 14.5 | Negative | Nachvak et al.(21) included 10 studies, missing one study from (20) which included only 4 studies | |
|  | 14 |  | 0.90 (0.81,1.00) |  | Nachvak et al.(21) | 14.5 |  |  | |
| Stroke | 14 | 2002-2015 | 0.82 (0.68, 0.99) | 78.8, <0.001 | Yan et al.(22) | 12.5 | Negative | Yan et al.(22) included all studies in Lou et al.(23) | |
|  | 5 | 2006-2009 | 0.54 (0.34, 0.87) | 79.5, 0.001 | Lou et al.(23) | 13 |  |
|  | 4 | 2005-2014 | Nonsignificant |  | Lou et al.(23) | 13 |  |
| CHD | 16 | 2001-2014 | 0.83 (0.72, 0.95) | 64.6, <0.001 | Yan et al.(22) | 12.5 | Negative | Yan et al.(22) included all studies in Lou et al.(23) | |
|  | 5 | 2001-2013 | 0.66 (0.56, 0.77) | 0.0, 0.421 | Lou et al.(23) | 13 |  |
|  | 6 | 2001-2014 | Nonsignificant |  | Lou et al.(23) | 13 |  |
| Cancer |  |  |  |  |  |  |  |  | |
| Gastrointestinal | 34 | 1988-2013 | 0.93 (0.87,0.99) | NR, 0.01 | Tse and Eslick (24) | 9.5 | Negative | Tse and Eslick (24) | |
|  | 14 | 2005-2015 | 0.86 (0.77, 0.96) | 44.3, 0.038 | Lu et al.(25) | 12.5 |  |  | |
| Gastric | 8 | 2005-2015 | 0.85 (0.72, 0.99) | 52, 0.52 | Lu et al.(25) | 12.5 | Negative | Lu et al.(25) | |
|  | 7 |  | 0.78 (0.62, 0.98) | 47.5, 0.013 | Weng and Yuan (26) | 9.5 |  |  | |
|  | 12 | 1991-2006 | 0.58 (0.52, 0.65) |  | Tong et al.(27) | 8.5 |  |  | |
|  | 4 | 2002-2009 | 0.56 (0.49, 0.71) | 0, 0.609 | Woo et al.(28) | 6.5 |  |  | |
| Colorectal | 7 | 2007-2009 | Nonsignificant |  | Lu et al.(25) | 12.5 | Negative | Yu et al.(29) included more up-to-date studies, all studies in (30), missing one study in Lu et al.(25) | |
|  | 20 | 1993-2009 | Nonsignificant |  | Yan et al.(30) | 9 |  |
|  | 3† | 2003-2005 | Nonsignificant |  | Woo et al.(28) | 6.5 |  |
|  | 26 | 1993-2015 | 0.79 (0.69–0.89) | 46.2, 0.006 | Yu et al.(29) | 11 |  |  | |
| Endocrine-related gynaecological | 7 | 1997-2008 | 0.61 (0.53, 0.72) | 12.1, NR | Myung et al.(31) |  | Negative |  | |
| Endometrial | 3 | 1997-2003 | 0.70 (0.57, 0.86) | 34.6, | Myung et al.(31) | 11.5 | Negative | Zhang et al.(32) | |
|  | 10 | 1996-2014 | 0.81 (0.72, 0.91) | 20, 0.26 | Zhang et al.(32) | 13.5 |  |  | |
| Breast | 9 | 1990-2005 | 0.75 (0.59, 0.95) | NR | Qin et al.(33) | 7.5 | Negative | Zhong and Zhang (34) | |
|  | 3† | NR | 0.61 (0.38, 0.99) | 65.1, 0.057 | Woo et al.(28) | 6.5 |  |  | |
|  | 13 | 1992-2012 | 0.72 (0.48, 0.97) | 91.4, 0.000 | Chen et al.(35) | 15 |  |  | |
|  | 11 | 1997-2010 | 0.64 (0.49, 0.80) | 66.5, 0.001 | Chen et al.(35) | 15 |  |  | |
|  | 28 | 1991-2010 | 0.86 (0.78, 0.96) | 45, 0.12 | Zhong and Zhang (34) | 10 |  |  | |
|  | 8 | 2005-2013 | 0.83 (0.69,.0.99) | 15.5, 0.07 | Nachvak et al.(21) | 14.5 |  |  | |
| Prostate | 5 | 2000-2007 | 0.69 (0.57, 0.84) | NR, 0.544 | Hwang et al.(36) | 11.5 | Negative | Yan and Spitznagel (37) | |
|  | 14 | 1988-2008 | 0.74 (0.63, 0.89) | NR | Yan and Spitznagel(37) | 11.5 |  |
|  | 8 | 1998-2004 | 0.70 (0.59–0.83) | NR | Yan and Spitznagel(38) | 6 |  |
| n number of component estimate. †: number of included studies, might include higher number of number of component estimate in the analysis. NR: not reported. | | | | | | | | |

Appendix A3: Selecting the best meta-analysis studies for the significant associations of unfermented, and fermented soy intakes with non-communicable of diseases: high vs. low intakes

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Incidences | Product types | Case/cohort (n) | Included study publication years | RR (95% CI) | Heterogeneity,  I2 %, p | Sources | AMSTAR score Max.=16 | Conclusion | Selected best study |
| Lung cancer | Unfermented | 4† | 1999-2009 | Negative | 0, 0.767 | (39) | 13.5 | Negative | (39) |
|  |  | 6† | NR | Nonsignificant |  | (40) | 13.5 |  |  |
| Gastric cancer | Unfermented soy | 23 | 1992-2009 | 0.64 (0.54, 0.77) | 64.27, 0.001 | Kim et al.(41) | 10.5 | Negative | Kim et al.(41), Weng and Yuan (26) rejected for small sample size, Wu et al.(42) rejected for low AMSTAR score and outdated |
|  |  | 4 | NR | 0.63 (0.50, 0.79) | 0.0, 0.001 | Weng and Yuan(26) | 9.5 |  |
|  |  | 11 |  | 0.72 (0.63, 0.82) | NR | Wu et al.(42) | 3 |  |
|  | Fermented soy | 29 | 1988-2009 | 1.22 (1.02, 1.44) | 71.48, 0.001 | Kim et al.(41) | 10.5 | Positive | Kim et al.(41) |
|  |  | 4 | 2002-2015 | Nonsignificant | 0.0, | Weng and Yuan(26) | 9.5 |  |  |
|  |  | 17 | 1970-1998 | 0.90 (0.86, 0.94) | NR | Wu et al.(42) | 3 |  |  |
| Colorectal cancer | Unfermented soy | 3† | NR | 0.85 (0.73, 0.99) | 41.0, 008 | Zhu et al.(43) | 11 | Inconclusive |  |
|  |  | 3† |  | Nonsignificant |  | Woo et al.(28) | 6.5 |  |  |
| Prostate cancer | Unfermented soy | 11 | 1989-2008 | 0.65 (0.52, 0.83) | 60.3, 0.005 | Applegate et al.(44) | 12 | Negative | Applegate et al.(44) |
|  |  | 8 | 1989-2004 | 0.75 (0.62, 0.89) | NR, 0.413 | Hwang et al.(36) | 11.5 |  |  |
|  |  | 8 | 1998-2008 | 0.70 (0.56, 0.88) | NR | Yan and Spitznagel(37) | 11.5 |  |  |
|  | Fermented soy | 8 | 1989-2008 | Nonsignificant |  | Applegate et al.(44) | 12 | Nonsignificant |  |
|  |  | 5 | NR | Nonsignificant |  | Hwang et al.(36) | 11.5 |  |  |
|  |  | 6 | 1988-2007 | Nonsignificant | NR | Yan and Spitznagel(37) | 11.5 |  |  |
| n number of component estimate. †: number of included studies, might include higher number of number of component estimate in the analysis. NR: not reported. | | | | | | | | | |

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