

Table 1 Systematic reviews of green tea for cancerSource: Jianping Liu, Xun Li, CAM-Cancer Consortium. [Green tea \(Camellia sinensis\), \[online document\]](#).

Study ID	Type of review	No. of included studies*	Type of cancer	Main findings
Yuan JM 2011 (USA) [4]	Systematic review	67 cohort studies, 70 case-control, 8 randomized, placebo-controlled, phase II clinical trials,	Cancer in general	High intake of green tea was consistently associated with reduced risk of upper gastrointestinal tract cancers after sufficient control for confounders. Limited data support a protective effect of green tea on lung and hepatocellular carcinogenesis. Phase II clinical trials have demonstrated an inhibitory effect of green tea extract against the progression of prostate pre-malignant lesions. Green tea may exert beneficial effects against mammary carcinogenesis in premenopausal women and recurrence of breast cancer. There is no sufficient evidence that supports a protective role of tea intake on the development of cancers of the colorectum, pancreas, urinary tract, glioma, lymphoma, and leukemia.
Boehm K 2009 (Cochrane) [5]	Systematic review	27 case-control, 23 cohort, 1 randomized controlled trial	Cancer in general	There was limited evidence that green tea could reduce the incidence of liver cancer. The evidence for esophageal, gastric, colon, rectum, and pancreatic cancer was conflicting. In prostate cancer, observational studies with higher methodological quality and the only included RCT suggested a decreased risk in men consuming higher quantities green tea or green tea extracts. However, there was limited to moderate evidence that the consumption of green tea reduced the risk of lung cancer, especially in men, and urinary bladder cancer or that it could even increase the risk of the latter. There was moderate to strong evidence that green tea consumption does not decrease the risk of dying from gastric cancer. There was limited moderate to strong evidence for lung, pancreatic and colorectal cancer. There is insufficient and conflicting evidence to give any firm recommendations regarding green tea consumption for cancer prevention.
Sturgeon JL 2009 (USA) [6]	Systematic review	2 RCTs, 14 case-control, 7 cohort studies	Cancer in general	Evidence suggested associations between green tea consumption and a decreased risk for gastric, esophageal (women), breast and lung (non-smoking women) cancers, and conflicting results were found in studies of colon, rectal and pancreatic cancer, as well as prostate cancer, thus the findings were inconclusive. In selected cases, green tea was effective in slowing the progression of the earlier stages of cancer. However, contrary evidence is reported and the dose and duration of use is variable. Most evidence stems from self-reports.
Liu J 2008 (China) [7]	Systematic review	22 cohort, 20 case-control, 1 phase I trial, 4 randomized clinical trials, 1 meta-analysis of 2 cohort	Cancer in general	While some evidence suggested that green tea has beneficial effects on cancer prevention, especially gastrointestinal cancers, the findings are not consistent.
Fritz H 2013 [9]	Systematic review	2 phase I trials, 3 reports of one surrogate study, 79 preclinical studies	Lung cancer	The review concluded that there was currently insufficient evidence to support green tea as a treatment or preventative agent for lung cancer.

Wang Y 2012 (China) [10]	Meta-analysis	6 cohort/case-control studies	Lung cancer	The dose-response relationship is nonlinear ($p < 0.00$) between green tea consumption and risk of lung cancer, showing a favorable effect of green tea consumption (for overall significance: $p < 0.00$), especially for consumers of > 7 cups per day.
Tang N 2009 (China) [8]	Systematic review, meta-analysis	5 cohort, 7 case-control	Lung cancer	The summary relative risk showed a borderline significant association between highest green tea consumption and reduced risk of lung cancer (RR=0.78, 95% CI: 0.61-1.00). An increase in green tea consumption of 2 cups/day was associated with an 18% decreased risk of developing lung cancer (RR=0.82, 95% CI: 0.71-0.96).
Sang LX 2013 (China) [12]	Meta-analysis	12 observational studies	Esophageal cancer	The pooled relative risk (RR) was 1.09 [95% confidence interval (CI), 0.76-1.55] for greatest vs. non/least green tea consumption; however, there was significant heterogeneity across studies ($P = 0.00$, $I^2 = 75.5\%$). Compared with subjects who drank no/least green tea, the pooled RR was 1.14 (95% CI = 0.97-1.35) for moderate drinkers, 0.94 (95% CI = 0.77-1.13) for those who drank little, and 0.97 (95% CI = 0.77-1.22) for all subjects who had ever drunk green tea. Subgroup analysis showed that the RR was 0.46 (95% CI = 0.29-0.73) for female subjects. Further research is needed to confirm the results and clarify the likely biological mechanisms due to current limited research.
Zheng JS 2013(China) [13]	Systematic review and meta-analysis	2 cohort and 14 case control studies	Esophageal cancer	The pooled OR of EC (esophageal cancer) was 0.77 [95% confidence intervals (95% CI): 0.57, 1.04] for highest vs. non/lowest green tea consumption; but it was statistically significant for case-control studies (OR = 0.70; 95% CI: 0.51, 0.96) and for studies conducted in China (OR = 0.64; 95% CI: 0.44, 0.95).
Zheng P 2012 (China) [11]	Meta-analysis	2 cohort and 8 case control studies	Esophageal cancer	There were no association between high/medium/low green tea consumption and non-drinking risk of esophageal cancer (High: highest vs non-drinker: RR/OR = 0.76, 95% CI: 0.49 to 1.02. Medium: drinker vs non-drinker: RR/OR = 0.86, 95% CI: 0.70 to 1.03. Low: lowest vs non-drinker: RR/OR = 0.83, 95% CI: 0.58 to 1.08). When stratified analyses according to study design (case-control and cohort studies), country (China and Japan), participates source (population-based and hospital-based case-control), and gender (female and male), however, there were significant association between high/medium/low green tea consumption and non-drinking risk of esophageal cancer among female (High: RR/OR = 0.32, 95% CI: 0.10 to 0.54. Medium: RR/OR = 0.43, 95% CI: 0.21 to 0.66. Low: RR/OR = 0.45, 95% CI: 0.10 to 0.79), but not the others.
Hou IC 2013 (China) [14]	Systematic review	7 cohort and 10 case control studies	Stomach cancer	Seven studies suggested no association, eight an inverse association, and one a positive association. One study had shown a significantly lowered GC risk when tea was served warm to cold. Another study also showed a significantly decreased risk with lukewarm tea. All studies that analyzed men and women separately have suggested a reduced risk in women than in men, albeit no significant difference. This review concluded that the current evidence insufficient to support green tea consumption for reducing stomach cancer.
Sasazuki S 2012 (Japan) [17]	Systematic review and meta-analysis	8 cohort and 3 case control studies	Stomach cancer	Overall, no preventive effect on stomach cancer for green tea intake in cohort studies was found. However, a small, consistent risk reduction limited to women was observed, which was confirmed by pooling data of six cohort studies (hazard ratio = 0.79, 95% confidence interval 0.65-0.96 with ≥ 5 cups/day of green tea intake). Case-control studies consistently showed a weak inverse association between green tea intake and stomach cancer risk.

Kang H 2010 (Korea) [15]	Systematic review, meta-analysis	7 cohort, 1 population-based nested case-control, 10 case-control	Stomach cancer	The combined results indicated a reduced risk of stomach cancer with intake of green tea (RR/OR=0.86, 95% CI:0.74-1.00). Subgroup analysis reported differences between the highest and lowest consumption levels equal to or greater than five cups/day revealed a statistically significant protective effect (RR/OR=0.68, 95% CI: 0.53-0.87).
Myung SK 2009 (Korea) [16]	Systematic review, meta-analysis	8 case-control, 5 cohort	Stomach cancer	The pooled results indicated the increased risk of stomach and the highest level of green tea consumption using both the crude data (OR=1.10; 95% CI: 0.92-1.32) and the adjusted data OR=0.82; 95% CI: 0.70-0.96). In the meta-analyses of case-control studies, no significant association was seen between green tea consumption and stomach cancer using the crude data (OR=0.79; 95% CI: 0.58-1.07), but a preventive effect using the adjusted data (OR=0.73; 95% CI: 0.64-0.83). For cohort studies, the highest green tea consumption was significantly increase stomach cancer risk using the crude data (RR, 1.59; 95% CI, 1.16-2.18), but no significant association using the adjusted data (RR, 1.04; 95% CI, 0.93-1.17). No preventive effect on stomach cancer was seen for the highest green tea consumption in the meta-analysis of the cohort studies.
Sing MF 2011 (China) [18]	Systematic review, meta-analysis	6 case-control, 7 cohort	Liver cancer	An inverse association with a borderline significance (RR=0.77; 95% CI=0.57-1.03) was found between tea consumption and primary liver cancer. Both men and women showed the preventive effects of tea intake on the development of primary liver cancer. Green tea consumption was associated with a moderate reduction in risk for primary liver cancer (RR=0.79; 95% CI=0.68-0.93).
Wang ZH 2012 (China) [21]	Meta-analysis	6 cohort studies	Colorectal cancer	The combined RR of 0.90 (95% CI: 0.72-1.08) was found comparing highest vs. lowest green tea consumption levels for colorectal cancer. No significant differences by cancer-site were found, but an inverse association between green tea and incidence of colorectal cancer (RR: 0.70; 95% CI: 0.55-0.85) and colon cancer (RR: 0.69; 95% CI: 0.48-0.98) was demonstrated in Shanghai population. Singapore men had a higher risk of colorectal cancer (RR: 1.36; 95% CI: 1.06-1.74). Furthermore, an increase in green tea consumption of 1 cup/day was not associated with incidence of colorectal cancer (RR: 0.97; 95% CI: 0.91-1.03).
Wang XJ 2012 (China) [20]	Meta-analysis	13 case control studies	Colorectal cancer	The study found a weak but not statistically significant reduced risk of colorectal cancer with high dose of green tea intake (OR=0.95, 95% CI: 0.81-1.11, p=0.49) and the protective effect tendency was found in all subgroups except in American and European populations.
Sun CL 2006 (USA) [19]	Systematic review, meta-analysis	4 cohort, 4 case-control	Colorectal cancer	The combined results indicated a reduced risk of colorectal cancer with intake (OR=0.82; 95%CI: 0.69-0.98). The inverse association between green tea intake and colorectal cancer risk was observed only in case-control studies (OR=0.74; 95%CI; 0.63-0.86). The data were insufficient to conclude that either tea type may protect against colorectal cancer in humans.
Wang X 2013 (China) [22]	Meta-analysis	1 cohort and 9 case control studies of tea, 2 cohort and 2 case control studies of green tea	Bladder cancer	No statistical significance was detected between tea consumption and bladder cancer risk when comparing the highest with the lowest intake of tea (OR = 0.825, 95% CI 0.652-1.043). In the subgroup of green tea, we observed it illustrated a protective effect on bladder cancer (OR = 0.814, 95% CI 0.678-0.976).
Wu SH (China) 2013 [23]	Meta-analysis	3 cohort and 12 case control studies involving green tea or overall tea (both green tea and black tea) consumption, and 5	Bladder cancer	For overall tea consumption, there was no association between tea consumption and bladder cancer (RR=1.09, 95%CI: 0.85-1.40). No relationship associated with bladder cancer risk (RR=1.03, 95%CI: 0.82-1.31) was found in people taking green tea.

		studies involving green tea alone		
Qin J 2012 [24]	Meta-analysis	6 cohort and 14 case control studies involving different types of tea or green tea alone	Bladder cancer	No association with bladder cancer was observed in either overall tea consumption (OR=0.94, 95% CI 0.85-1.04) or subgroups stratified by sex, study design, geographical region or tea types.
Zheng J 2011 (China) [26]	Systematic review, meta-analysis	4 cohort, 3 case-control	Prostate cancer	The summary OR of prostate cancer indicated a borderline significant association in Asian populations for highest green tea consumption vs. non/lowest (OR=0.62; 95%CI: 0.38-1.01); and the pooled estimate reached statistically significant level for case-control studies (OR=0.43; 95% CI: 0.25-0.73), but not for prospective cohort studies (OR=1.00; 95% CI: 0.66-1.53).
Butler LM 2011 (USA) [31]	Systematic review	10 case-control studies, 4 randomized clinical trials	Gynecologic cancer	It demonstrated the inverse associations for green tea intake and risk of ovarian cancer (OR=0.66; 95% CI: 0.54, 0.80), and for green tea and risk of endometrial cancer (OR=0.78, 95% CI: 0.62, 0.98). Green tea catechin efficacy on treatment of cervical lesions and external genital warts was found.
Wu YL 2013 (China) [29]	Meta-analysis	9 cohort/case control studies	Breast cancer	The combined results from 9 studies suggested no significant association between green tea consumption and breast cancer risk (RR = 0.82, 95% CI = 0.64-1.04). No significant association was found among cohort studies and case-control studies after sensitivity analysis, respectively. A linear but not significant dose-response association was found between green tea consumption and breast cancer risk.
Ogunleye AA 2010 (USA) [27]	Systematic review, meta-analysis	4 cohort, 4 case-control, 1 nested case-control	Breast cancer	Increased green tea consumption (>3 cups a day) was inversely associated with breast cancer recurrence (Pooled RR=0.73, 95% CI: 0.56-0.96). An inverse association was found in the analysis of case-control studies (Pooled RR=0.81, 95% CI: 0.75-0.88) but not in the cohort studies.
Trudel D 2012 [30]	Systematic review	5 case control studies	Epithelial ovarian cancer	Significant associations between green tea intake and both decreased ovarian cancer occurrence and better prognosis were reported.
*excluding data of studies on black tea or other types of tea.				