



# HerbClip™

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**File: ■ Tea (*Camellia sinensis*)  
■ Bladder Cancer**

**HC 111231-462**

**Date: December 14, 2012**

**RE: Green Tea, but Not Black Tea, May Protect against Bladder Cancer**

Wang X, Lin Y-W, Wang S, et al. A meta-analysis of tea consumption and the risk of bladder cancer. *Urol Int.* 2012; [epub ahead of print]. doi: 10.1159/000342804.

Bladder cancer is the 11<sup>th</sup> most commonly diagnosed cancer in the world.<sup>1</sup> Genetic and environmental factors, as well as aging and smoking, are considered risk factors for bladder cancer. Previous research has suggested that tea (*Camellia sinensis*) may help protect against several types of cancer, including bladder cancer. Epidemiological studies on the association between tea consumption and bladder cancer have yielded mixed results. A 2001 meta-analysis found no correlation between tea consumption and the occurrence of bladder cancer.<sup>2</sup> This new meta-analysis includes more recent multicenter and large sample studies which provide greater statistical power.

The authors identified papers published in English between 1980 and March 2012 by searching PubMed, Web of Science, the Cochrane Library, cited references, and previous meta-analyses. The publications were cohort or case-control studies assessing the association between tea consumption and bladder cancer risk, with results including the relative risk (RR) or odds ratio (OR) and its 95% confidence interval (CI), or with sufficient information to calculate the values.

A total of 17 studies with 8,225 cases were included in the analysis; 4 cohort studies and 13 case-control studies. Seven evaluated Asian populations and the remaining 10 assessed Caucasians. Five studies examined black tea consumption, 4 focused on green tea intake, and the other 8 studies did not distinguish the type of tea.

No significant association was detected between tea consumption and bladder cancer risk in the crude data analysis (OR=0.825; 95% CI, 0.652-1.043). However, as a statistically significant heterogeneity was detected ( $I^2=93.3\%$ ), a random-effect analysis was conducted. Similar results were found when potentially confounding variables such as age, gender, and smoking status were excluded (OR=1.12; 95% CI, 0.88-1.43), and there was still significant heterogeneity ( $I^2=64.6\%$ ). Sensitivity analysis indicated that no single study could influence the results and no publication bias was found among the studies.

Stratified analyses (by gender, study design, ethnicity, and smoking status) indicated that tea consumption was associated with a decreased risk for bladder cancer, although the results were not significant. However, green tea consumption in Asian countries was associated with a statistically significant protective effect against bladder cancer (OR=0.814; 95% CI, 0.678-0.976), while no such association was noted for black tea.

Interestingly, in the subgroup analysis of ethnicity, tea consumption was not associated with a reduced risk of bladder cancer in Asians. The authors suggest that this may be due to the fact that 2 of the 7 Asian population studies only assessed black tea consumption.

The authors noted that none of the studies conducted in Western countries analyzed the correlation between green tea consumption and bladder cancer risk. They acknowledged that the majority of the included studies analyzed "tea" consumption in general rather than the specific type of tea, which may have resulted in inaccurate estimates. Selection bias, recall bias, and ethnic differences in bladder cancer risk cannot be ruled out. Also, the differences in study design may have biased the results since both cohort and case-control studies were included. Other limitations of this analysis are the exclusion of non-English language publications and studies that the authors deemed to have provided insufficient information.

The authors conclude that their analysis "indicated that green tea may have a protective effect on bladder cancer in Asian people," but that "no such correlation was detected between black tea and bladder cancer."

—Shari Henson

#### References

<sup>1</sup>Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. *CA Cancer J Clin.* 2011;61(2):69-90.

<sup>2</sup>Zeegers MP, Tan FE, Goldbohm RA, van den Brandt PA. Are coffee and tea consumption associated with urinary tract cancer risk? A systematic review and meta-analysis. *Int J Epidemiol.* 2001;30(2):353-362.

The American Botanical Council has chosen not to reprint the original article.

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