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**File: ■ Chamomile (*Matricaria recutita* syn. *Chamomilla recutita*, Asteraceae)
■ Mortality
■ Mexican-American Survey**

HC 101543-540

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RE: Chamomile Shows Protective Effects against Mortality in Older Mexican Women

Howrey BT, Peek MK, McKee JM, Raji MA, Ottenbacher KJ, Markides KS. Chamomile consumption and mortality: a prospective study of Mexican origin older adults. *Gerontologist*. April 29, 2015; [epub ahead of print]. doi: 10.1093/geront/gnv051.

Using data from the Hispanic Established Populations for the Epidemiologic Studies of the Elderly (H-EPESE), a population-based study of 3050 free-living Mexican-Americans aged 65 and older in five southwestern states, the authors examined effects of chamomile (*Matricaria recutita* syn. *Chamomilla recutita*, Asteraceae) consumption on mortality in all H-EPESE participants from 2000-2007 (n=1677). H-EPESE data have been collected in seven waves beginning in 1993-1994; the authors began with Wave 4 (2000-2001), when herbal use was first reliably queried. Mortality data, verified through the National Death Index and Social Security, exist through 2007, setting the time frame of the study. Final survival status of each cohort member was determined at the end of Wave 6 data collection. Data used represented 7824 person-years with 644 deaths. Cause-specific mortality was determined by *International Statistical Classification of Diseases and Related Health Problems*, Tenth Revision (ICD-10) codes.

Data from the 2002 National Health Interview Survey/Complementary and Alternative Medicine supplement (NHIS/CAM) show that about 20% of US residents used herbs or herbal supplements in the 12 months preceding the survey; among Hispanics and Asian-Americans, 30%. Prevalence is higher among women than men; among Mexican-Americans, twice as high. Tea (*Camellia sinensis*, Theaceae) consumption is one of the most common forms of herb use, with both black and green tea beverages linked to lower risk of mortality, fewer cardiovascular events, and reduced incidence of some cancers in regular users. A Japanese study found that drinking three or more cups of green tea daily was associated with reduced risk of mortality, especially for women and for cardiovascular-related deaths. However, Mexican-American adults typically drink chamomile (*manzanilla*) infusions rather than tea. The authors hypothesized that chamomile use in their sample would be associated with reduced all-cause mortality and possibly fewer cardiovascular-related and cancer deaths, and that, given gender differences in chamomile use, effects would differ for women and men. H-EPESE participants were asked if they had used any herbal medication in the two weeks

preceding their response; those who responded affirmatively were asked to name the herbs used, with up to four responses coded for each participant.

Chamomile was used by 14% of the cohort. An initial Cox proportional hazards analysis for all-cause mortality, cancer, and chronic heart disease was adjusted only for chamomile use. A second model also considered age, gender, marital status, level of education, financial strain (determined by self-reported degree of difficulty in paying monthly bills), and nativity (US or foreign born); a third added diagnoses of hypertension, heart attack, diabetes, and arthritis; and a fourth added limitations in activities of daily living (ADL), depressive symptoms (as measured by the Center for Epidemiologic Studies Depression Scale [CESD]), body mass index (BMI), and tobacco (*Nicotiana tabacum*, Solanaceae) and alcohol use. Regression analyses showed chamomile associated with 29% less risk of mortality for the whole sample (hazard ratio [HR] 0.71, 95% confidence interval [CI] 0.55-0.92), and 33% reduced risk for women (HR 0.67, 95% CI 0.49-0.92) but not men. After adjusting for sociodemographic and health variables, chamomile remained significantly associated with a 28% reduced mortality risk in women (HR 0.72, 95% CI 0.53-0.98). In the cohort, female gender conferred a 45% reduction in risk from all-cause mortality. While place of birth had no effect on men, US-born women saw an increased risk of mortality of 27%. Underweight women were more than twice as likely to die. Depressive symptoms in men were associated with a 37% risk increase, but obese men had a 36% reduced risk of mortality. Fully adjusted models showed no association between chamomile use and any specific causes of death.

Potential health effects of chamomile have been studied in humans and in vivo. Its active compounds include terpenoids, alpha-bisabolol, and azulenes, with known antioxidant, antimicrobial, antiplatelet, and anti-inflammatory effects. Its antioxidant effects include reduced lipid oxidation. Chamomile's constituents are associated with cancer prevention, cholesterol-lowering activities, antigenotoxic effects, and sedation. Its apigenin glucosides and alpha-bisabolol may cause apoptosis in cancer cells. Chamomile is often used in Mexico for gastrointestinal ailments, and clinical case studies show it may be helpful in dyspepsia and in mucositis following radiation and chemotherapy. It may have benefits in hyperglycemia, diabetic complications, and anxiety disorder. It is perhaps most commonly consumed, alone or in herbal blends, to promote restful sleep and has been reported to improve daytime functioning in patients with chronic insomnia.

This study could not determine a dose-response relationship for chamomile because of limitations in the data used. The particular pathways that chamomile may influence in reducing risk of all-cause mortality are unknown and long-term effects of consumption are unclear. Further study is warranted in different populations, with a particular need to ascertain levels of and reasons for chamomile use.

—*Mariann Garner-Wizard*

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