P.O. Box 144345 Austin, TX 78714-4345 ▪ 512.926.4900 ▪ Fax: 512.926.2345 ▪ www.herbalgram.org

HerbClip™

File: ■ Turmeric (*Curcuma longa*)
■ Curcumin
■ Pulmonary Function

HC 021311-475

Date: June 28, 2013

RE: Curcumin-rich Curry Meals May Improve Pulmonary Function in the Elderly

Ng TP, Niti M, Yap KB, Tan WC. Curcumins-rich curry diet and pulmonary function in Asian older adults. *PLoS One*. 2012;7(12):e51753. doi: 10.1371/journal.pone.0051753.

Curcumin comes from the rhizome of the turmeric (*Curcuma longa*) plant, which is the principle yellow spice used in many Asian curry recipes. Turmeric is also used as a traditional medicine for various health conditions. Moreover, curcumin is known to have potent antioxidant and anti-inflammatory properties. Some of the health effects of curcumin may benefit an elderly population at high risk for chronic obstructive pulmonary disease (COPD) by protecting their lungs against oxidative stress and inflammation; however, there have been no studies that have assessed the protective effect of turmeric consumption in relation to COPD in elderly people that smoke. Therefore, the aim of this preliminary study is to examine the association of curry intake and pulmonary function among elderly smokers and nonsmokers.

This study was conducted in 5 districts in the South East Region of Singapore as part of the Singapore Longitudinal Aging Study (SLAS). Subjects aged ≥55 years (n=3894) were recruited, and people with severe physical or mental illnesses were excluded. Respiratory function was assessed by the 2 best measurements of forced vital capacity (FVC) and forced expiratory volume in the first second (FEV_1), by using a spirometer. The data obtained from these tests (n=2478) excluded those that could not perform the test (n=81), had unsatisfactory spirometric performances (n=46), or had missing data (n=3). The frequency of curry intake was evaluated by a questionnaire that assessed how often subjects consumed foods with curry (< once in 6 months [rarely]; once in 6 months but < once a month [occasionally]; once a month but < once a week [often]; or ≥ once a week [very often]). Daily use of antioxidant supplements or vitamins was also evaluated by yes/no responses. Moreover, a brief semiquantitative food frequency questionnaire assessed the consumption of milk products (at least once a day), fruits and vegetables (at least once a day), and fish (>3 times a week). Other information obtained from the subjects included age, socioeconomic status, smoking habits, past exposure to dust or fumes, and medical history.

The mean age of the study subjects was 66 years. Nearly 10% of the subjects consumed curry at least once a week, and 25% of the subjects consumed curry at least once a month. The frequencies of daily intake of vitamins (A, C, E, and D), omega-3 fatty acids, and selenium were 18%, 6.5%, and 2.2%, respectively. The remaining percentage of subjects did

not take any of these supplements. Furthermore, the majority of the subjects consumed fruits and vegetables daily, and about half of the subjects consumed milk products daily and/or fish >3 times a week. The relationship between curry intake and other dietary or supplement intake (Spearman correlations) was 0.065 (P=0.001) for vitamins A, C, or E intake; 0.058 (P=0.008) for vitamin D intake; 0.058 (P=0.004) for daily omega-3 intake; 0.032 (P=0.11) for selenium intake; 0.067 (P=0.001) for fish intake >3 times a week; -0.019 (P=0.34) for daily fruit/vegetable intake; and -0.030 (P=0.14) for daily milk product intake.

When added to the base model, curry intake was found to have independent positive associations with FEV_1 (b=0.049 ± 0.018; P=0.005), which also remained the case when other dietary and supplement intakes were analyzed simultaneously. When multivariate analysis controlled for gender, age, height, smoking, occupational exposure, and asthma/COPD history, consuming curry meals at least once a month was associated with significant improvement of FEV_1 (b=0.045 ± 0.018; P=0.011) and FEV_1/FVC% (b=1.14 ± 0.52; P=0.029). When controlling for the other variables, there was a linear trend increase in FEV_1 associated with greater frequency of curry intake, which was significant across all frequency intake levels (P=0.001). Compared to those that consumed curry meals rarely (mean FEV_1=1.57 L), those who ate curry meals occasionally (mean FEV_1=1.64 L), often (mean FEV_1=1.67 L), or very often (mean FEV_1=1.68 L) showed a 4.3%, 6.7%, and 6.3% increase in mean FEV_1, respectively. These results were similar to the results of FVC and FEV_1/FVC%.

Curry consumption (at least once a month) also varied significantly by smoking status (interaction: P=0.028). The FEV_1 for non-curry intake was lowest for current smokers (1.53 L), and was higher for past smokers (1.63 L) and non-smokers (1.71 L). These values increased with the curry intake (> once monthly) of current smokers (9.2%) and past smokers (10.3%), and marginally improved for non-smokers (1.5%). A similar trend was observed for FEV_1/FVC%. In addition, consistent results were found for subjects that consumed curry who had a history of COPD or asthma (n=76), as indicated by the values of FEV_1 (b=+0.335 ± standard error [SE]=0.104; P=0.002), FVC (b=+0.324 ± SE=0.143; P=0.027), and FEV_1/FVC% (b=+4.50 ± SE=3.37; P=0.18).

The results of this preliminary study indicate that consumption of curry meals may improve the pulmonary function of the elderly, especially in smokers; however, the authors suggest that the questionnaires used in this study may have limited the study and should have included total energy intake and 24-hour dietary recall methods. Future studies should provide more details about the amount of curcumin or curry consumed. Moreover, this study was only conducted with male subjects, and therefore women should also be evaluated. This study indicates that there is a possible protective effect of curcumin for elderly subjects who are at risk for COPD, but clinical trials are warranted to confirm these effects.

—Laura. M. Bystrom, PhD

Referenced article can be found at
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3530490/pdf/pone.0051753.pdf.