Borage Consumption as a Possible Gastric Cancer Protective Factor

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In a recent paper we reported the main results of a case-control study of gastric cancer and dietary factors, carried out in four regions of Spain (1). The overall results supported the hypothesis of increased risk from salted and preserved foods and protection from vegetables and fruits. One of the most striking results for individual foods was a 3-fold reduction in risk observed for consumers compared to nonconsumers of borage (OR = 0.35; 95% CI = 0.18–0.71).

Although we had no specific hypothesis about the possible effect of borage, it was included in the dietary questionnaire because it is highly consumed in one of the study areas (Zaragoza), where the leaves and stem are eaten cooked, usually boiled in water. After further analysis by regions, we found that in the province of Zaragoza 92% of controls ate borage at least 0.5 times a week during the previous year. The risk associated with the consumption of borage (consumers versus nonconsumers), adjusted for the total caloric intake and the consumption of fruits and other vegetables, was OR = 0.15 (95% CI, 0.06–0.72). Considering the level of consumption in four categories (nonconsumers as the referent category and three categories among consumers), the ORs and CIs were estimated using a conditional logistic regression.

The analysis of fatty acids from the leaves and stems showed that diet containing GLA significantly increased the synthesis of E₁ prostaglandins, but only inhibited mammary tumorigenesis if the diet also contained α-linolenic acid (6). E₁ prostaglandins increased the stomach mucosal mass in dogs (7).

The analysis of fatty acids from the leaves and stems of borage have shown an important amount of GLA, even after cooking. There are approximately 60 mg of GLA in each 100 g of boiled borage. This finding may explain the possible protective effect against gastric cancer. However, our study does not eliminate alternative interpretations of our results: consumption of borage may...
be a strong indicator of a diet rich in vegetables and fruits, or other components of borage may be responsible for its anticarcinogenic properties. It is also possible that the finding with regard to borage may be due to chance. Chemoprevention of cancer is considered a novel and promising approach, and dietary constituents appear to be the main candidates for clinical prevention trials (8). Our results should encourage new and more extended investigations.

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References
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