Micronutrient fortified condiments and noodles to reduce anemia in children and adults—a literature review and meta-analysis

Micronutrient deficiencies impose a considerable burden of disease on many middle and low income countries. Several strategies have been shown to be effective in improving micronutrient deficiencies. However, the impact of fortified condiments as well as fortified noodles is less well documented. We aimed to investigate existing evidence on the impact of micronutrient fortified condiments and noodles on hemoglobin, anemia, and functional outcomes in children and adults (age: 5 to 50 years). We conducted a literature review in electronic databases. In addition, we screened the homepages of relevant organizations and journals. We included randomized controlled trials (RCT). Of 1046 retrieved studies, 14 RCT provided data for the meta-analysis. Micronutrient fortification of condiments and noodles increased hemoglobin concentrations by 0.74 g/dL (95%-confidence intervals (95%-CI): 0.56 to 0.93; 12 studies) and 0.3 g/dL (95%-CI: 0.12 to 0.48; 1 study), respectively. Micronutrient fortification also led to a reduced risk of having anemia (risk ratio 0.59 (95%-CI 0.44 to 0.80)). Ferritin concentrations increased with fortified condiments. Functional outcomes were rarely assessed and showed mixed results. The use of micronutrient fortified condiments can be a strategy to reduce anemia in children and adults due to micronutrient deficiencies.

In the recent years, there has been a growing interest in monitoring heavy metal contamination of spices/herbs. Spices and herbs are sources of many bioactive compounds that can improve the tastes of food as well as influence digestion and metabolism processes. In the present study, the levels of some essential and toxic elements such as iron (Fe), zinc (Zn), copper (Cu), chromium (Cr), manganese (Mn), cobalt (Co), nickel (Ni), lead (Pb), and cadmium (Cd), present in common spices/herbs that were purchased from the local market in Saudi Arabia, were analyzed by atomic absorption spectroscopy after digestion with nitric acid/hydrogen peroxide mixture. Samples from the following spices/herbs were used: turmeric, cloves, black pepper, red pepper, cumin, legume, cinnamon, abazir, white pepper, ginger, and coriander. The concentration ranges for the studied elements were found as 48.8-231, 4.7-19.4, 2.5-10.5, below detection level (BDL)-1.0, 8.8-490, 1.0-2.6, and BDL-3.7 µg g°'1 for Fe, Zn, Cu, Cr, Mn, Ni, and Pb, respectively, while Cd and Co levels were below the detection limit. Consumers of these spices/herbs would not be exposed to any risk associated with the daily intake of 10 g of spices per day as far as metals Fe, Zn, Cu, Cr, Mn, Ni, and Pb are concerned [Z. S. Seddigi*, G. A. Kandho, F. Shah, E. Danish, M. Soyak (Department of Chemistry, Faculty of Sciences, Erciyes University, Kayseri, Turkey), Toxicology and Industrial Health, 2016, 32(2), 260-269].

Spices and dried vegetable seasonings are potential sources of bacterial contamination for foods. However, little is known about lactic acid bacteria (LAB) in spices and dried vegetables, even though certain LAB may cause food spoilage. In this study, we enumerated LAB in...
104 spices and dried vegetables products aimed for the food manufacturing industry. The products were obtained from a spice wholesaler operating in Finland, and were sampled during a one-year period. We picked isolates (n = 343) for species identification based on numerical analysis of their ribotyping patterns and comparing them with the corresponding patterns of LAB type strains. We found LAB at levels >2 log CFU/g in 68 (65%) of the samples, with the highest counts detected from dried onion products and garlic powder with counts ranging from 4.24 to 6.64 log CFU/g. The LAB identified were predominantly Weissella spp. (61%) and Pediococcus spp. (15%) with Weissella confusa, Weissella cibaria, Weissella paramesenteroides, Pediococcus acidilactici and Pediococcus pentosaceus being the species identified. Other species identified belonged to the genera of Enterococcus spp. (8%), Leuconostoc spp. (6%) and Lactobacillus spp. (2%). Among the LAB identified, Leuconostoc citreum, Leuconostoc mesenteroides and W. confusa have been associated with food spoilage. Our findings suggest that spices and dried vegetables are potential sources of LAB contamination in the food industry [E. Säde*, E. Lassila, J. Björkroth (Department of Food Hygiene and Environmental Health, Faculty of Veterinary Medicine, University of Helsinki, Finland), Food Microbiology, 2016, 53, 110-114].

NPARR, 7(2), 2016-184 Chemopreventive prospective of dietary spices against hepatocellular carcinoma

Hepatocellular carcinoma (HCC), a primary liver cancer, is one of the most fatal cancers having universal prevalence. Developing countries of Asia and Africa are reported with more HCC cases compared to the United States and Europe. Surgical resection and liver transplantation present limited treatment choices for HCC. It is need of the hour to investigate promising alternative chemopreventive and therapeutic strategies to control the disease. In most cases HCC develops and progresses in an environment of inflammation and oxidative stress. Phytochemicals such as dietary spices and their active components gifted with potent anti-inflammatory and antioxidant properties, offer an appropriate alternative mitigation of HCC. Ginger, turmeric and garlic are the commonly used spices. Studies suggest that these have anti-inflammatory, antioxidant and antitumour activities. This article reviews their apoptotic, anti-inflammatory and antioxidant effects as well as involvement of various molecular signalling pathways [T. Akhtar*, N. Sheikh (Cell and Molecular Biology Lab, Department of Zoology, University of the Punjab, Q-A Campus, Lahore, Pakistan), Current Science, 2016, 110(4), 579-583].