Food As Medicine

An Evidence-Based Approach

The Big Book of Food Research

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Disclaimer

This book has not been evaluated by the FDA and is not intended to diagnose, treat, cure or prevent any disease.

The information contained in this book is for educational purposes only, and should not be construed as medical advice or instruction. No action should be taken based solely on the contents of this book. Readers should consult appropriate health officials.

While extensive efforts have been made to ensure the accuracy of the information contained, the possibility of errors, omissions, and misinterpretations cannot be ruled out. The reader is advised to consult the original references for verification and clarification.

Foreward

Food As Medicine contains summaries of published research on food, primarily clinical trials on humans from PubMed. The focus is on food. In most cases, this excludes extracts and powders.

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Introduction

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Food As Medicine contains the summaries of research on foods you would find in the produce section of the grocery store. The focus is on human studies published in PubMed, the database from the National Institutes of Health at The United States National Library of Medicine.

This book is different than other books on diet and nutrition. There are thousands of books that proved scientific backing for a specific point of view or opinion on what you should and should not eat. These books cite study after study to prove their point and often ignore research that contradicts, or cite studies to discredit it. This, unfortunately, often leads only to confusion. This book doesn't do that.

Books written about food for health usually describe foods that are good for you, and why. This book doesn't do that. It simply presents published studies on food.

Food As Medicine shows the research without an overall point or opinion. Some studies examine the effect of consuming foods on a disease. Many test the glycemic index of the foods.

If you are confused, you'll probably still be confused after reading this book. But you'll know quite a bit more about food. Maybe you might try cooking and eating something new (like boiling and mashing plantain bananas).

Prepared Food contains prepared foods you might not consider as healthy, such as chocolate, pizza, and ice cream. There are also chapters on muffins and scones where wheat flour is replaced with healthier alternatives.

Mixed Meals

In most cases, prepared foods contain several ingredients, which makes them a "mixed meal". Many studies calculate the glycemic index and postprandial glucose and insulin responses for specific products usually designed for health.

Sections

The placement of foods into sections presents some issues. Tomato is hopefully correctly placed as a vegetable. Beet is a vegetable, but is placed in prepared foods because most of the studies use juices that are tested for nitrate content and nitrates are added if needed.

Vegetables

Artichoke

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Artichoke (Cynara scolymus) is a tall plant. The thistle-like flower head with edible fleshy leaves and heart is eaten as a vegetable.

Cooked artichoke hearts or artichoke leaf extract are believed to be helpful in the treatment of dyslipidemia. The effects of cooked artichoke hearts can be attributed mainly to its soluble fibers, particularly inulin. (Santos et al., 2018)

Constipation

Probiotic-enriched artichokes have a positive effect on symptoms in constipated patients. {Riezzo et al., 2012, Aliment Pharmacol Ther, 35, 441-50}

A study published in *Alimentary Pharmacology & Therapeutics* evaluated the effects of probiotic-enriched artichokes on treatment preference, symptom profile and short-chain fatty acid (SCFA) production in constipated subjects when compared with ordinary artichokes. The National Institute of Digestive Diseases, Bari, Italy conducted the study.

Twenty constipated patients (3M/17F; 38.8 ± 14.4 years) were studied using a double-blind method and a computer-generated randomisation list. Each patient consumed 180 g per day of ordinary artichokes or artichokes enriched with Lactobacillus paracasei IMPC 2.1 for 15 days (daily dose of 2 × 10(10) CFU). Relief of symptoms was evaluated using a visual analogue scale. The stool consistency and symptom profile of patients were investigated using the Bristol stool form chart and the Gastrointestinal Symptom Rating Scale questionnaire (GSRS). SCFA production in fecal samples was evaluated using HPLC. Artichokes were supplied by Copaim Spa (Albinia, Italy).

Eighty per cent of patients preferred probiotic-enriched artichokes to ordinary ones ($P = 0.011$). Satisfactory relief of symptoms was significantly higher ($P = 0.0014$) during the probiotic-enriched artichoke period. Bristol chart cluster scores were significantly higher (3.3 ± 1.2, 2.9 ± 1.3 2.2 ± 1.2, baseline, ordinary artichokes and probiotic-enriched ones, respectively; $P = 0.009$) and GSRS constipation was significantly lower (13.9 ± 0.9, 10.2 ± 0.8, 8.3 ± 0.9; $P = 0.032$) in the probiotic group compared with the baseline. As for SCFA production, propionic acid was significantly higher (2.2 ± 1.4, 2.1 ± 1.53, 1.5 ± 1.2; $P = 0.035$) in the probiotic group compared with baseline.

This trial shows a positive effect on symptoms in constipated patients after intake of probiotic-enriched artichokes. {Riezzo et al., 2012, Aliment Pharmacol Ther, 35, 441-50}

Constipation

Artichokes enriched with a probiotic can improve the symptomatic pattern and intestinal microbial activity of constipated participants. {Valerio et al., 2010, J Clin Gastroenterol, 44 Suppl 1, S49-53}

A study published in the *Journal of Clinical Gastroenterology* determined whether the consumption of artichokes enriched with a probiotic Lactobacillus paracasei strain affects fecal microbiota composition, fecal enzyme activity, and short-chain fatty acids production and symptom profile in patients suffering from constipation. The Institute of Sciences of Food Production, National Research Council, Bari, Italy conducted the study.

For 15 days, 8 volunteers (3M/5F age 40+/-14 y) integrated their normal diet with artichokes (180 gr) enriched with 20 billions of L. paracasei LMGP22043. Faecal samples were subjected to microbiologic and biochemical analyses. Besides, investigations on symptom profile of the volunteers and stool consistency were carried out by using a validated questionnaire (Gastrointestinal Symptom Rating Scale) and the Bristol stool form chart.

The gut of all volunteers resulted to be colonized by the probiotic strain after 15 days feeding. No significant differences in the microbiological counts throughout the experimental period were registered, whereas a significant increase of butyric and valeric acids with a concomitant decrease of lactic acid was registered. At the same time, the fecal beta-glucuronidase activity was significantly reduced. Finally, the analysis of symptom profile indicated a marked reduction in abdominal distension and feeling of incomplete evacuation.

These preliminary data suggest that novel approaches for treating constipation can come through ingestion of probiotic vegetable products that, acting as symbiotics, can ameliorate this common disorder. {Valerio et al., 2010, J Clin Gastroenterol, 44 Suppl 1, S49-53}

Inulin

Jerusalem artichoke inulin or chicory inulin in bakery products stimulates the growth of bifidobacteria and may contribute to the suppression of potential pathogenic bacteria. (Kleessen et al., 2007)

A study published in the *British Journal of Nutrition* tested the effects of Jerusalem artichoke inulin (JA) or chicory inulin (CH) in snack bars on composition of fecal microbiota, concentration of fecal short-chain fatty acids (SCFA), bowel habit and gastrointestinal symptoms. The University of Leipzig, Germany conducted the study.

Forty-five volunteers participated in a double-blind, randomized, placebo-controlled, parallel-group study. At the end of a 7 day run-in period, subjects were randomly assigned to three groups of fifteen subjects each, consuming either snack bars with chicory inulin or Jerusalem artichoke inulin, or snack bars without fructans (placebo); for 7 days (adaptation period), they ingested one snack bar per day (7.7 g fructan/d) and continued for 14 days with two snack bars per day. The composition of the microbiota was monitored weekly.

Snack bars were produced by Dr Quendt Backwaren GmbH (Dresden, Germany). The bars consisted of purely vegetable ingredients, which naturally did not contain any cholesterol or gluten. Snack bars with Jerusalem artichoke inulin contained syrup of the tubers of Jerusalem artichoke in substitution to the equal amount of juice concentrates. Snack bars with chicory inulin consisted of Fibruline Instant, which was also a component of the binder.

The consumption of chicory inulin or Jerusalem artichoke inulin increased counts of bifidobacteria (+1.2 log10 in 21 d) and reduced Bacteroides/Prevotella in number and the Clostridium histolyticum/C. lituseburense group in frequency at the end of intervention ($P < 0.05$). No changes in concentration of fecal SCFA were observed. Consumption of snack bars resulted in a slight increase in stool frequency. Stool consistency was slightly affected in subjects consuming two snack bars containing chicory inulin or Jerusalem artichoke inulin per day ($P < 0.05$). Consumption of chicory inulin or Jerusalem artichoke inulin resulted in mild and sometimes moderate flatulence in a few subjects compared to placebo ($P < 0.05$). No structural differences were detected between chicory inulin and Jerusalem artichoke inulin before and after processing.

In conclusion, adaptation on increased doses of chicory inulin or Jerusalem artichoke inulin in bakery products stimulates the growth of bifidobacteria and may contribute to the suppression of potential pathogenic bacteria. (Kleessen et al., 2007)

References

Kleessen, B, et al. (2007), 'Jerusalem artichoke and chicory inulin in bakery products affect faecal microbiota of healthy volunteers.', *Br J Nutr*, 98 (3), 540-49. PubMed: 17445348

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