Fermented foods are foods or beverages made as a result of extensive microbial growth and are an important part of human diets

- Variations in food fermentations are the result of different starting ingredients, initial processing steps (e.g. cutting, heating), and variations in incubation conditions
- Fermentations can be spontaneous (wild) or initiated using “starter cultures” or a small portion of a prior ferment (backslopping)
- They are made using single (example: yogurt) or multiple (example: soy sauce) steps and can take hours, days, weeks to months prepare
- Depending on the food, a pasteurization step can be included (example: sourdough bread)
- There are no standards of identity for most fermented foods, besides yogurt

Food fermentations rely on complex microbial ecosystems

- Microbes tend to grow rapidly in symbiosis and then sustain large population sizes
- Laboratory culture-independent methods have led to a better understanding of the microbial diversity in fermented foods
- The flavors and health-impacting compounds in fermented foods are made as a result of microbial metabolism and use of food components

While more human studies are needed to evaluate the health-promoting aspects of fermented foods, current research suggests they positively affect the following, where dairy is the most extensively researched source:

- **Yogurt**
  - Reduced risk for Type 2 Diabetes
  - Inverse association with adiposity factors
  - Reduced risk for cardiovascular disease

- **Kefir**
  - Improvement in bone mineral density in osteoporosis patients
  - Improved *Helicobacter pylori* symptoms

- **Fermented milk**
  - Reduction in muscle soreness

- **Sauerkraut**
  - Reduced IBS severity scores

- **Kimchi**
  - Improved insulin sensitivity, blood pressure, and metrics of adiposity
  - Lower presence of atopic dermatitis

- **Sourdough**
  - Better tolerated by IBS patients
  - Improved GI tolerance in healthy subjects

The standard of identity regarding yogurt fermentation must include, but are not limited to the following bacteria:

- Streptococcus thermophilus
- Lactobacillus delbrueckii subspecies bulgaricus

How do microbes change foods?

- Safety is frequently improved
- Preservation is enhanced
- Transform food ingredients
- Synthesize new bioactives
- Increase numbers of living microbes

Just because a fermented food has living bacteria does not mean it is “probiotic”

- Probiotics are living microbes that when consumed in adequate amounts can confer a health benefit
- Fermented foods containing undefined microbial strains should not be considered probiotic
- A strain is a clonal population whereby all members have the same genotype
References:


