

FERMENTED FOODS



Fermented Foods

- Research does exist for fermented foods
- Plus there is a lot of historical use information
- You can use both to help you make decisions as to what to try
- They provide transient bacteria for the intestinal tract
- The key is to find what works for your diet and what you can consume on a regular basis



Does It Make A Difference

- 3 different studies have compared the microbiome of rural Africans, Japanese and South Americans consuming a traditional diet with plenty of fermented foods
- They found that those consuming the traditional diet had higher levels of lactobacillus and bifidus strains and lower levels of clostridium than people living in western urban centres



Lowering Anxiety

- In another study at the 445 students answered questions regarding fermented foods, neuroticism, and social anxiety – they also looked what else they ate and exercise levels
- Found that those with high neuroticism had lowers levels of anxiety the more fermented foods they ate - exercise had a similar effect



How much per week

- A study looked at people who consumed at least 3 different types of fermented food and had at least 5 servings per week
- The fermented foods were removed for two weeks and immune response was lowered
- Yogurt was added back first and while immune response improved, it did not return to previous level until all the fermented foods added back in
- Quantity and diversity matter



Understanding Fermented Foods

- Most fermented foods are made with an anaerobic process – meaning the good bacteria, and the build up of lactic acid and other acids do so without oxygen
- This means there are no molds present or bad bacteria and only synergistic yeast in some products
- Milk and water kefir – it is anaerobic but synergistic yeast is present
- Kombucha and sourdough – is an aerobic process – oxygen is needed for the development of the wild yeasts

Sauerkraut

- Produced in a brine and has a ph of about 4
- Has all the benefits of cabbage which have been potentiated
- As the cabbage ferments, it secretes lactic acid which is what lowers the ph level from neutral to 4
- Other vegetables can be added or herbs to add to the flavour and to increase the nutrient diversity
- It is antimicrobial and anti-fungal and the foods or juice can be used to preserve other foods.



Sauerkraut

- Isothiocyanates in sauerkraut have cancer-protective effects in animal studies.
- Good bacteria produces enzymes that activate the isothiocyanates for absorption
- This is already done for you if the food has been fermented
- Source of Vitamin U = S-Methylmethionine – may help peptic ulcers and protect the liver
- Aid digestions and helps digestion of other foods in the meal
- Prebiotic



Kimchi

- Has the benefits of several key foods as it is a combinations of cabbage, carrots, onions, garlic, ginger, daikon radish and hot red pepper powder (capsacin)
- Kimchi helps carbohydrate metabolism and the capsacin in the red pepper powder boosts the body's metabolism
- The cabbage and radish contain phytonutrients such as isothiocyanates and sulfide helpful in detoxifying heavy metals found in the liver, small intestine and kidney.
- Isothiocyanates may also help prevent stomach cancer



Kimchi Benefits

- Kimchi causes immune cells to be more active and antibodies to be more abundant
- A high cholesterol diet and kimchi can increase immune activity better than a normal diet alone or a high cholesterol diet alone
- Garlic and red pepper powder help prevent gastritis and peptic ulcer by inhibiting H. Pylori
- 3 or 6 g of freeze dried kimchi capsules daily taking by obese women decreased body weight significantly
- It aids digestion of all the food in the meal, has antimicrobial properties and aids intestinal health and helps prevent constipation

Kimchi Benefits

- Lowers homocysteine in blood that causes blood vessel diseases and is a factor in developing heart disease and Alzheimer's
- People who eat kimchi twice or three times a day had lower chances of having a heart attack
- Prevents aging of the skin and is a major antioxidant with nutrients such as beta carotene and selenium
- *Bacillus pumilus*, found in kimchi helped detox carcinogen and xenoestrogen Bisphenol A (found in plastic)
- Kimchi with added mustard leaf, Korean Mistletoe and Chinese pepper inhibited human colon cancer cells 62-80 % (in a lab)

Kombucha

- Made with a scoby (symbiotic colony of bacteria and yeast) tea (with caffeine) and sugar
- It has anti-microbial properties
- One study showed that it aided wound healing in rats
- Another study looked at its ability to inhibit the spread of cancer cells and found it has some properties to do this
- It helps stabilize blood sugar
- Aid digestions



Kombucha

- It helps with cholesterol and offers beneficial antioxidant protection
- Research focusses on the tea polyphenols found in black and green tea which are more bioavailable in kombucha and can explain a lot of the health benefits.
- Improves learning, memory, and mood. It can help alleviate anxiety and increase resilience to stress
- Also protects the brain from oxidative stress and protect telomeres from damage
- L-Threonine- which keeps you calm and helps produce serotonin



Water Kefir

- The exact origin of water kefir grains is unknown – may be Mexico, Japan..
- A combination of symbiotic good bacteria and yeasts that work together
- It feeds on sugar
- Contributes to gut health, like other fermented foods
- Good bacteria strains in water kefir are immune supportive
- Anecdotaly, may help prevent colds and flus
- More research needs to be done on the specific strains



Water Kefir

- There is little research for water kefir
- Contain antioxidants which increases as fermentation increases
- Lowers cholesterol and triglycerides
- Stabilizes blood sugar and can help provide sustained energy
- Help aid digestion
- Synthesizes vitamins especially the B's



Milk Kefir

- Originated from the Caucasian mountains in Russia. Despite attempts to duplicate them, only kefir grains can make traditional kefir
- Kefir grains are a symbiotic combination of 32 strains of good bacteria (both lactic acid and acetic acid strains) and yeasts
- The kefir bacteria and yeasts do not survive when separated as pure cultures – which is unusual
- Kefir has anti-inflammatory properties including it shows an ability to reduce histamine



Milk Kefir Benefits

- Stimulates the function of the immune system
- Polysaccharides found in kefir have been shown to inhibit tumour growth
- Anti-microbial properties – can inhibit food borne pathogens
- Lower serum triglycerides and cholesterol
- Beneficial for skin conditions like acne and eczema
- Studies with mice show kefir has anti-tumour properties
- May aid those who are lactose intolerant
- In a human study: 15 people were fed kefir, and saw a reduction in symptoms by 54 -71 %

Alternative Milk Kefir

- Works best with cow and goat milk – the lactose and GOS help feed the grains
- Coconut milk makes a great substitute
- Grains must be returned to cows milk every 3 batches or the grains will not proliferate and eventually will not survive



Beet Kvass

- Beet Kvass is well known in Caucas Mountains along with milk kefir and other fermented foods.
- It was used as a means to clean water – allowing the good bacteria to take care of the bad
- Often raisins are added or other fruits or vegetables to create a unique beverage
- Beets contain nitrates but fermentation converts nitrates to nitric oxide
- Nitric oxide increases blood flow to the brain which will help improve cognitive function and may help prevent dementia
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Beet Kvass

- All the health benefits of beets apply to beet kvass – except the nutrients are more bioavailable plus kvass contains good bacteria
- Beets contains different types of phytonutrients called betalains, - responsible for the red colour
- Betalains are both antioxidants and anti-inflammatories
- Beets aid the liver detoxification and support the kidney (fermenting prevents oxalates)
- Beets also contain tryptophan which converts serotonin – which is our anti-depressant neurotransmitter – this also will aid our ability to sleep

Cultured Vegetables

- Number one health benefit is making the vegetables more digestible and the nutrients more bioavailable
- Each vegetable has its own health benefits based on the vitamin, mineral and phytonutrient content
- There is very little research on the cultured vegetables themselves
- Fermented foods in a traditional diet also help keep blood sugar stable and low inflammation both in the gut and the body
- Phytonutrients also appear to help regulate how the good bacteria function



Sourdough

- Sourdough is made from a starter – flour and water that has been fermented by wild yeasts and lactic acid bacteria
- A good starter or “sponge” can last for decades and can be passed down from one generation to another
- The fermentation process changes how the grain is used by the body



Sourdough

- It makes the nutrients in the grains such as zinc, iron, magnesium, B vitamins and phytonutrients more available to be absorbed into the body and the yeast actually produces the B vitamins (even in white bread)
- It also breaks down the gluten and starches making the bread more digestible
- During fermentation, protease and peptidase enzymes act on the gliadin molecule
- Lactic acid bacteria lowers the pH of the sourdough to 3.5-4 which is the optimal pH for some protein enzymes to be active
- One study found that gluten, fully degraded by fermentation was safe for celiacs to consume

Sourdough and The Gut

- Modulate dietary fibre complex, releasing the phytonutrients such as ferulic acid – a potent antioxidant that blocks nitrosamines and makes Vitamin C and E more potent
- Produces glucan, fructans and gluco- and fructo-oligosaccharides with prebiotic properties
- Provides SCFA such as butyrate
- Lowers symptoms in IBS sufferers, who are bothered by wheat
- Make the wheat or grain more digestible



Sourdough

- Provides a lower blood sugar and insulin response
- One study found that sourdough in one meal for positively affect blood sugar for that meal and the next (breakfast may be the best time)
- This effect was with white sourdough and was more effective for blood sugar than regular whole wheat
- One possible reason for low glucose response is sourdough delays the gastric emptying – it slows the uptake into the blood stream
- Fermenting lowers the phytic acid content making minerals such as zinc, calcium and iron more available



Purchasing Fermented Foods

- It is important to know what to look for
- Unpasteurized fermented foods will always be in the refrigerator case in the store – not on a shelf
- Create a list of products in your area
- Source local sourdough bakers
- Discuss methods of incorporating fermented foods into the diet
- Serving size is between $\frac{1}{4}$ cup to $\frac{1}{2}$ cup but start slow and work up
- Start with a tsp if you are not sure how you react – this is most critical for those with big issues

Using Them In The Diet

- Use as a condiment, add it to dips, smoothies, top it onto soups, vegetable dishes or salads
- Can you cook with them – yes the digestibility and the extra bioavailability of the phytonutrients remains
- There is also information that dead bacteria has benefits
- And there may be some remaining benefits from the bacteria
- The key point is to get them into your diet

