Q. What is lacto-fermentation?

Lacto-fermentation is a method of preserving food using naturally occurring, lactobacilli bacteria. Lactobacilli bacteria are a large family of ‘good’ bacteria found on all living things and are more numerous on leaves and roots of plants growing on or near the ground. During fermentation, these lactic acid producing bacteria convert the starches and sugars found in food into lactic acid, a natural preservative. This lactic acid and the inclusion of salt also inhibit the putrefying bacteria which cause the decay of food. Lacto-fermentation is an anaerobic process and the presence of oxygen will ruin the final product. Adding whey increases lactobacilli numbers and can accelerate lacto-fermentation. It is now widely accepted that the human gut is seriously lacking the correct amounts of good bacteria because of the use of preservatives, antibiotics, antibacterials, contraceptives, chlorine and fluoride which kill ALL bacteria not just the bad ones.

Q. Why is fermented food good for me?

It increases the number of healthy flora along the length of the intestine thus enhancing the immune system and maintaining a balance in the variety of intestinal bacteria. The proliferation of lactobacilli bacteria during fermentation, increases the vitamin levels of the fermented food as well as producing numerous enzymes which enhances their digestibility. These beneficial organisms also produce antibiotic and anticarcinogenic substances as well as small amounts of benzoic acid and hydrogen peroxide.

Q. How much ferment can I eat?

It is advisable to introduce fermented foods into your diet gradually over a period of time. Ferments are meant to be consumed as condiments and can be served with all meals during the day. Korean people are said to eat approximately 125 grams (about a cup) of Kimchi per day.

Eating fermented foods increases the probiotic levels in your intestine which then.....

- Protect the integrity of the intestinal lining.
- Maintain immunity, since around half of the body's immune cells are in the intestines.
- Manufacture B vitamins (useful for vegans).
- Manufacture essential fatty acids.
- Extract calcium from dairy products.
- Aid absorption of vitamins and minerals.
- Produce enzymes to break down foods.
- Produce butyric acid, required for building colon cells.
- Produce anti-tumour substances.
- Produce antiviral substances.
- Produce anti-fungal substances.
- Prevent candida overgrowth.
- Destroy e coli, shigella and salmonella by making the intestinal tract more acidic and by releasing substances such as lactic acid, hydrogen peroxide, and selective antibiotics.
- Neutralize endotoxins produced in the body.
- Neutralize potentially carcinogenic nitrites in the digestive tract.
- Aid peristalsis (movement of the gut muscles) preventing constipation.
- Get rid of excess cholesterol by breaking down bile.
- Regulate cytokines so as to reduce inflammation.
- Produce anti-cancer isothiocyanates, such as sulfurophane and indol-3-carbinol from foods.

SAUERKRAUT SUPERFOOD
Health Benefits and History

Sauerkraut has been found recently to have more health benefits than virtually any other vegetable on the planet. The cruciferous vegetable is high in antioxidant cancer fighting compounds, fibre, vitamins, calcium, and minerals and even increases libido.

Digestive Aid

Eating sauerkraut is a great way to protect the balance of bacteria in your gastrointestinal tract. Sauerkraut is one of the few foods that contains the bacterium Lactobacilli plantarum.

L. planatarum is a very dominant strain of healthful bacteria which helps your digestive system in the following ways.....

- boosts the immune system by increasing antibodies that fight infectious disease
- inhibits pathogenic organisms including E.coli, salmonella and unhealthy overgrowth of candida (yeast)
- creates antioxidants (glutathione and superoxide dismustase) that scavenge free radicals which are a cancer precursor
- generates new nutrients including omega-3 fatty acids, digestive aids and the trace mineral GTF chromium

  Neutralizes the anti-nutrients found in many foods including the phytic acid found in all grains and the trypsin-inhibitors in soy

Further

Sauerkraut can cure an upset stomach and is the best natural physic there is.

Sauerkraut and its juice are one of many traditional folk remedies for constipation.

Fermentation increases nutrient values in the cabbage, especially vitamin C.

Fermented foods are also said to facilitate the breakdown and assimilation of proteins, therefore having a soothing effect on the nervous system.

Sauerkraut contains phytochemicals that are created during the fermentation process. These naturally occurring, beneficial by-products of sauerkraut help boost the immune system, which leads to a decrease in a number of health problems. The common cold, skin problems, weight gain and tainted blood are all fixed by a healthy functioning immune system.

In 'A Passion for Sauerkraut' by Samuel Hofer, he lists the following benefits.....

Strengthens the acidity of the stomach, prevents constipation, stimulates peristaltic movement of the intestines, increases the mucosal lining of the intestine, encourages pancreas function and stimulates the secretion of all digestive juices, re-establishes healthy intestinal flora after taking antibiotics, improves blood circulation, helps cleanse the blood, supports natural resistance against infections and strengthens the body's immune system.

It also helps rid the body of worms, lowers the sugar in the blood and urine, controls a craving for sweets and alleviates morning sickness and over acidity during pregnancy.

Today it is thought that these benefits may relate to a high proportion of **lactic acid** in sauerkraut and its juice.

The Science of Lactic Acid Bacteria (LAB)

Usually found in decomposing plants and lactic products, LAB produce lactic acid as the major metabolic end-product of carbohydrate fermentation. This trait has, throughout history, linked LAB with food fermentations, as acidification inhibits the growth of spoilage agents.

proteinaceous bacteriocins are produced by several LAB strains and provide an additional hurdle for spoilage and pathogenic microorganisms.

Furthermore, lactic acid and other metabolic products contribute to the organoleptic and textural profile of a food item. **The importance of the LAB is further evinced by their generally recognized as safe (GRAS) status, due to their ubiquitous appearance in food and their contribution to the healthy micro flora of human mucosal surfaces**. The genera that comprise the LAB are at its core *Lactobacillus*, *Leuconostoc*, *Pediococcus*, *Lactococcus*, and *Streptococcus* as well as the more peripheral *Aerococcus*, *Carnobacterium*, *Enterococcus*, *Oenococcus*, *Sporolactobacillus*, *Tetragenococcus*, *Vagococcus*, and *Weisella*; these belong to the order Lactobacillales.

History

When the rulers of the ancient Chinese Ming Dynasty around 400BC needed protection from Mongol invaders they began the construction of earth's largest defensive fortification, the Great Wall of China. Records show the Chinese began fermenting shredded cabbage in rice wine around this time. This quick and easy method of preparing cabbage allowed it to be kept for months with no costly cooling. The resulting product kept thousands of labourers healthy in the worst of conditions.

The Mongols eventually broke through the Great Wall under the leadership of Genghis Khan and quickly took a liking to the unique taste of the Chinese pickled cabbage. The concoction's ability to keep for long periods of time and easy preparation made the cabbage product a perfect choice for the Mongol horde as they conquered most of the known world. It was the Mongols that reportedly first brought the idea of fermenting cabbage to Europe.

Scurvy, mainly caused by lack of fresh fruit and vegetables, occurred on land, usually in sieges, as is well described in accounts of the fifth and seventh Crusades, but it became known as 'the calamity of sailors' with the introduction of long voyages, beginning in 1492. Between 1500 and 1800, more seamen died of scurvy than of all other causes combined. Vasco da Gama's voyage to the East Indies around the Cape of Good Hope brought death from scurvy to 100 of his 160 sailors. Sir Richard Hawkins of the British Navy said that in his 20 years at sea in the early 17th century, he personally saw about 10,000 mariners perish from scurvy.

As the Dutch empire grew in the 17th century, sauerkraut became a staple food for the long sea voyages of discovery. The high vitamin C content, as well as its ability to last for a long time, made it the perfect food to fight scurvy. It is widely accepted that Captain James Cook once ordered 25,000 pounds of "sourkrout" to outfit two of his ships exploring the South Pacific. Cook noted that scurvy seemed to afflict Dutch sailors less severely than it did the English and concluded that sauerkraut might be a factor. The Dutch were fond of sauerkraut, whereas the English disliked it and ridiculed those who ate it regularly by referring to these wartime enemies as 'Krauts'. Cook took plenty of sauerkraut aboard, but did not compel his sailors to eat it. He did order his officers to join him in eating sauerkraut daily, encouraging the rest of the crew to follow the officers' example, if the wished to do so. Within a week, every man on the ship was asking for sauerkraut. On that long second voyage, Cook lost only 1 of 118 men to scurvy. Ships eventually changed to limes as their source of Vit C, hence the name 'limeys'.

During the great migration to the New World, Germanic peoples brought their favourite vegetable to America where they integrated sauerkraut into the new country's diverse climate. The word sauerkraut was first mentioned in the American English Dictionary in 1776 and is commonly associated with German communities. During the Civil War some enlightened doctors fed sauerkraut to prisoners of war, reducing the death rate from smallpox from 90 percent to only 5 percent.

Hypocrites, the well known Greek doctor claimed the fermented cabbage helped patients lose weight, detoxify their bodies and heal metabolic diseases.

Sauerkraut is still a popular item all over the world including Eastern Europe, USA and France (Chocrute), and is consumed by most of the population daily in Asia (Kimchee).

Kimchi has made international headlines lately after South Korean scientists at Seoul National University say they've successfully treated infected chickens with Kimchi.

Kimchi is a spiced and seasoned version of traditional sauerkraut, both contain an important bacteria, lactic acid, which appears to kill avian flu. 13 infected chickens ate sauerkraut and 11 of them got better.

crunchy cabbage sauerkraut

Crunchy Cabbage Sauerkraut is very simple and easy to make. It will aid digestion, build the immune system, relieve reflux and much, much more.

utensils

Food processor with shredder attachment
or sharp kitchen knife
Shallow wooden or plastic bowl
Wooden pounder or meat mallet
Wide-mouthed 750 ml jar
Smaller jar to fit inside the large jar
30 cm sq piece of muslin or tuille
Shallow dish or tray

ingredients

Half a med sized purple or green cabbage
1 tblsp good quality, non iodized, salt
2 tblsp of caraway or fennel seed
1 cup filtered water with 1 tsp of salt added

method

Shred or finely slice the cabbage. Place a third into the large shallow bowl and sprinkle with a third of the salt and caraway or fennel seed. Pound this mix for about one minute to bruise the cabbage and release the juices. Continue to add the remaining cabbage in two more layers, sprinkling each with the salt and seeds and pound for several minutes more.

Toss the cabbage mix to thoroughly combine the ingredients.

Now place handfuls of the cabbage into the wide mouthed jar and press down very firmly. You will be surprised how much will fit into the jar once you really start to force the cabbage in. You should see some juice rising up around the cabbage now. Don't fill the jar to the top. The cabbage needs to be at least 4 cms below the rim. If the cabbage isn't well covered with juices add some of the salted water.

Place the filled jar onto the shallow dish or tray. Place the smaller jar, filled with water, into your large jar to help hold the cabbage under the liquid in an anaerobic state. Now cover the jar with the muslin or tuille.

Place on the kitchen bench for between 3 and 7 days, depending on the weather. Check your jar each day to make sure the cabbage is still submerged and after 2 days start tasting it.

A white bloom or foam may appear on the surface and this can be scooped off, but it isn't absolutely necessary You will notice an odour as the cabbage starts to ferment. You will get used to this new aroma over time and this smell is entirely desirable. Of course, if things go badly wrong, you will definitely know, as the smell will be decidedly unpleasant. When the cabbage has a tangy/piquant flavour, remove the smaller jar, place the lid on the sauerkraut and store in the refrigerator. It will keep in the refrigerator for at least 6 months or longer.

sauerkraut can be used as an accompaniment to most meals