GUT FLORA
&
LACTOFERMENTATION

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Paris, France

DAEGAK
BERLIN Sept 17-19 2010
YEAR 1876

Carl von Linde
Germany
1876
(134 years ago)

Create the first REFRIGERATOR

Carl von Linde
HOW DID HUMANKIND SURVIVE BEFORE 1876
FOOD FERMENTATION

• This is the major traditional natural & slow food preservation procedure

• Food fermentation and local traditional agriculture have grown and expanded at the same time together
FERMENTED FOOD
HISTORY

Wine : 10.000 BC
Vinegar : 10.000 BC
Cheese : 10.000 BC
Beer : 8.000 BC
Bread : 8.000 BC
Milk : 3.000 BC
Vegetable : 500 - 1.000 BC
Sauerkraut : Around JC
FERMENTED FOOD DIVERSITY

• Around 3,500 fermented foods have been available worldwide

• Every culture has one, several or more fermented food traditions
SANITATION

Louis Pasteur
1822-1895

MICROBIOLOGY

Carl von Linde
1876

REFRIGERATION
MODERN FOOD PRESERVATION TECHNOLOGIES

Pasteurisation  Preservatives
Sterilisation  Radiation
Canning  Pascalisation  (high pressure)
Refrigeration  Microfiltration
Freezing  Modified atmosphere
Dehydration  Biopreservation
Lyophilisation  Airless packaging
Ionization
FOOD PRESERVATION
COMPETITION

Traditional slow food preservation technologies have entered into competition with Modern fast food preservation technologies.
FERMENTED FOODS

Various fermentations

Carbohydrates → Organic acids

<table>
<thead>
<tr>
<th>Type</th>
<th>Food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lactic</td>
<td>Cereal, Bean, Vegetable, milk, fish, meat</td>
</tr>
<tr>
<td>Alcoholic</td>
<td>Fruit,</td>
</tr>
<tr>
<td>Acetic</td>
<td>Wine, Cider, Alcool</td>
</tr>
<tr>
<td>Propionic</td>
<td>Cheese</td>
</tr>
<tr>
<td>Butyric</td>
<td>Cheese</td>
</tr>
</tbody>
</table>
UNTIL 1980
Fermented food was 80% of the diet

TO DAY
Fermented foods have much disappeared from the diet
FERMENTED FOODS HAVE DISAPPEARED FROM THE DIET?

1/ The food industry structure has changed to serve the need of the growing world population:
   Intensive farming & worldwide food distribution. Maximum food shelf life, Maximum productivity

2/ Microbe phobia « 0 microbe philosophy »

3/ Codex Alimentarius. Infectious diseases control
Fermentation is the only food preservation procedure which improves food and taste quality. It brings qualities to food that do not exist in the fresh state.
THE GUT FLORA
GUT FRIENDLY BACTERIA CAN

- Produce digestive enzymes
- Build and repair the gut mucosa
- Destroy pathogens
- Contribute to immunity
- Fight allergy
- Prevent inflammation
- Produce vitamins Ex. : B12, K2,
- Produce hormones
GUT FRIENDLY BACTERIA CAN PRODUCE DIGESTIVE ENZYMES
2005


-
GUT FRIENDLY BACTERIA CAN BUILD AND REPAIR THE GUT MUCOSA

2003

GUT FRIENDLY BACTERIA CAN DESTROY PATHOGENS

2003

GUT FRIENDLY BACTERIA CAN CONTRIBUTE TO IMMUNITY 2005

GUT FRIENDLY BACTERIA CAN FIGHT ALLERGIES 2001

GUT FRIENDLY BACTERIA CAN CONTRIBUTE TO « INFLAMMATION PREVENTION » 2003

GUT FRIENDLY BACTERIA CAN PRODUCE VITAMINS 2005


James Cook 1728-1779
British Navigator

Scurvy was decimating his crew
He discovers the antidote: Sauerkraut rich in vitamin C
GUT FRIENDLY BACTERIA CAN PRODUCE HORMONES 1978

WHAT IF THE GUT FLORA WAS A TOP HEALTH PRIORITY?
A RADICAL STATEMENT

and

Three arguments

1/ The numbers
2/ The environment
3/ The ongoing research
ARGUMENT N° 1
THE NUMBERS

In the body there are
10 times more bacteria than human cells:

100 trillions ($10^{14}$) human cells
1000 trillions ($10^{15}$) bacteria

Ref:
RELATIONSHIP BETWEEN HUMAN & GUT FLORA

Research suggests there is a dynamic partnership between human physiology and microbiology.

There is a joint venture between human cells and gut flora.

HOMEOSTASY

The capacity to maintain a dynamic equilibrium in an ever changing stressful environment

Claude BERNARD (1813-1878)
Homeostasy is an environmental reality which applies both to human cells and gut flora
PHYSIOLOGY TEXTBOOKS

Human physiology

Gut bacteria physiology
ARGUMENT N° 2
THE ENVIRONMENT

- The 1st and most important element is the environment
- The 2nd and most important element is the environment
- The 3rd and most important element is the environment

Our closest & most important neighbours are the gut flora « inside the body ».
A COUNTRY HOME

The most important element is the environment.

This law applies to everything including Biology and Physiology.
ARGUMENT N° 3
THE ONGOING RESEARCH

Human microorganisms and their relationship to health and disease have become a world wide research priority

1/ Human Oral Microbiome Database:
   600 bacteria have been identified in the mouth
2/ Metagenomics of the Human Intestinal tract:
   20 Millions €, 4 years, started in 2008
3/ Human Microbiome Project:
   115 Millions US $, 5 years, started in 2007
MAJOR HEALTH BENEFITS FROM REINTRODUCING FERMENTED FOODS

It entertains a friendly dominant gut flora

Feeding the gut with friendly bacteria from quality fermented foods
GUT FLORA
GUT MICROBIOTA

DEFINITION

Microorganisms that live in the digestive tract
LACTOFERMENTATION

DEFINITION

Anaerobic metabolic process by which gut bacteria convert sugars into lactic acid

The King traditional slow food preservation procedures
ZYMOTOLOGY

Definition
INFLUENCE OF FOOD ON GUT FLORA COMPETITION

TRADITIONAL FOOD FERMENTATION → FRIENDLY GUT FLORA ASSISTANCE

HI-TECH FOOD PRESERVATION → NO FRIENDLY GUT FLORA ASSISTANCE

FOOD PUTRIFICACTION → UNFRIENDLY GUT FLORA ASSISTANCE
WHICH DOMINANT GUT FLORA

Friendly Microorganisms → Comfort

Unfriendly Microorganisms → Permanent Microbiological Stress
Lactic acid bacteria are the great architects of biology.

They are life essentials.
LACTOBACILLUS BACTERIA
The Royal Family

of

the lactic acid bacteria kingdom

Lactobacillus bacteria has
a slightly acid Ph
LACTOBACILLUS

125 known different species

An exemple: Lactobacillus acidophilus

Petri dish

Elecron micrography
LACTOBACILLUS NUTRITIONAL NEEDS

MANGANESE


PREBIOTICS

Non digestible fibers

• Fructo-oligosaccharides (FOS, Fructane)
• Galacto-oligosaccharides (GOS)

<table>
<thead>
<tr>
<th>Source</th>
<th>Food</th>
<th>Lactic Acid Bacteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereal:</td>
<td>Bread</td>
<td>Lb Sanfrancisco</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lb Fermentum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lb Brevis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lb Plantarum</td>
</tr>
<tr>
<td>Vegetable:</td>
<td>Sauerkraut, pickle</td>
<td>Lb Plantarum</td>
</tr>
<tr>
<td>Dairy:</td>
<td>Cultured milk : Cheese,</td>
<td>Lb Lactis,</td>
</tr>
<tr>
<td></td>
<td>Buttermilk, Kefir</td>
<td>Lb Delbrueckii</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lb Helveticus</td>
</tr>
<tr>
<td>Fish:</td>
<td>Smoked salmon</td>
<td>Lb Plantarum</td>
</tr>
<tr>
<td>Meat:</td>
<td>Salami, smoked ham</td>
<td>Lb plantarum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lb Curvatus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lb Sakei</td>
</tr>
<tr>
<td>Bean:</td>
<td>Miso</td>
<td>Lb Delbrueckii</td>
</tr>
</tbody>
</table>
FERMENTED FOODS
WARNINGS

Pasteurised fermented foods?
Polluted foods?
Traditional fermented foods containing hazardous ingredients (Fermented food made in China ???)
Cooked fermented foods?
Foods from intensive farming?
Fermented foods containing preservatives?
Food that have undergone putrifaction instead of fermentation (food smells bad instead of great) ?
Food fermented with excessive amount of salt?
Fermented meats (they contain nitrates)?
FERMENTED VEGETABLES

Pickles

Olives

Fermented Vegetable juices
FERMENTED CEREALS

BROTTRUNK

www.kanne-brottrunk.de
ASIAN FERMENTED FOODS

- Bonito: Beens & rice  
  Origin: Japan.
- Miso: Rice & soy.  
  Origin: Asia.
- Shoyu: Soy & wheat.  
  Origin: Asia.
- Nuoc-mam: Fish sauce.  
  Origin: Asia.
- Kimchi: Sauerkraut + spices  
  Origin: Korea.
- Bortsch: bettrave  
  Russia / Ukraine
FERMENTED CEREALS

FERMENTED SOY
FERMENTED CEREALS
HOME MADE SAUERKROUT

Harsch Fermentation Crock Pot
Size from 7,5 liters to 30 liters

www.amazon.com
HOME MADE FRUIT KEFIR

Combination of bacteria
Lactobacillus hilgardii and yeast
in a matrix of proteins, lipids and sugars

3 minutes at room temperature

Bottle
1,5 L

A starter culture: kefir grains
3 table spoons

Cane sugar:
3/4 table spoons

Water
1,40 L

Figues (dried)
2

Lemon
3 slices (½ a lemon)
KEFIR STARTER SUPPLY

« Kefir grains »
on internet search
or
www.yalacta.com
Kefir de fruit
NEW FOOD
STERILISED FOOD
+ CHLORINATED WATER

STRESS
Shortens & speeds up food mastication

ENZYME DEFICIENCY
Intensive farming
High temperature cooking
Pollution: Heavy metals, Pesticides, Etc…

LACTIC GUT FLORA
DEsertification

UNFRIENDLY BACTERIA
DOMINANCE
Putrefaction

LOW NUTRIENT FOOD
Malnutrition

LEAKY GUT BARRIER
Waste Reabsorption

TOXIN DISSEMINATION
Neurotoxicity

LOW NOISE CHRONIC INFECTION
Permanent immune System activation

Richard MELDENER
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AK APPLICATION

- Specific therapeutic fermented foods need can be challenged against weak manual muscle testing

- Gut bacteria do not Therapy Localize (TL)

- It is naive to use one by one bacteria nosodes for gut bacteria deficiency diagnosis because:
  - Bacteria « in vivo » only have a social life
  - Most bacteria are unknown

- Fermented foods are alive

  Test kits have a limited shelf life.
WHAT IF LACTOFERMENTED FOODS WERE A PRIORITY AGAINST NEURODEGENERATIVE DISEASES?

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