Probiotics

Summary of the possible applications of probiotic bacteria in the treatment and prevention of cancer. Figure summaries most significant findings from studies in vitro and in vivo mentioned in text [89-114]. This figure was prepared using Servier Medical Art, available from www.servier.com/Powerpoint-image-bank. Legend: downwards arrow decrease, upwards arrow increase ACF aberrant crypt foci, MPL multiple plaque lesions.
**GENERAL TUMOR**

- ↑ cytotoxic activity
- ↑ survival rate
- ↓ tumor progression
- ↓ angiogenesis
- ↑ mitochondrial apoptosis
- ↑ tumor specific immunoresponse

**Tumor:**
- prevention
- treatment
Diet and Cancer

• The good and the bad
• Food which triggers and promotes cancer growth
• Food which reduces cancer growth
• Hormones and additives in food
• Weight more important than type of food
• Fasting or not fasting?
• Extreme Dieting?
Minerals and Trace Elements

• Some important ones
  – Iodine
  – Selenium
  – Zinc
  – Magnesium
Bioflavonoids

- Cruciferous Vegetables
- Broccoli Seed Extracts
- Ginger
- Quercetin
- Resveratrol
- Lycopenes
Avoid Cancer Promoters

• Growth Promoters in food
  – Hormones
  – Others
• Pro-inflammatoryatories
• Excess Sugar
• Carcinogens
Carcinogens

Acetaldehyde (from consuming alcoholic beverages)
Acheson process, occupational exposure associated with
Acid mists, strong inorganic
Aflatoxins
Alcoholic beverages
Aluminum production
4-Aminobiphenyl
Areca nut
Aristolochic acid (and plants containing it)
Arsenic and inorganic arsenic compounds
Asbestos (all forms) and mineral substances (such as talc or vermiculite) that contain asbestos
Auramine production
Azathioprine
Benzene
Benzidine and dyes metabolized to benzidine
Benzo[a]pyrene
Beryllium and beryllium compounds
Betel quid, with or without tobacco
Bis(chloromethyl)ether and chloromethyl methyl ether (technical-grade)
Busulfan
1,3-Butadiene
Cadmium and cadmium compounds
Chlorambucil
Chlorophosphamide
Chlorambucil
Chloromaphazine
Chromium (VI) compounds
Clonorchis sinensis (infection with), also known as the Chinese liver fluke
Coal, indoor emissions from household combustion
Coal gasification
Coal-tar distillation
Coal-tar pitch
Coke production
Cyclophosphamide
Cyclosporine (ciclosporin)
1,2-Dichloropropane
Diethylstilbestrol (DES)
Engine exhaust, diesel
Epstein-Barr virus (EBV) (infection with)
Erionite
Estrogen-only menopausal therapy
Estrogen-progestogen menopausal therapy (combined)
Estrogen-progestogen oral contraceptives (combined) (Note: There is also convincing evidence in humans that these agents confer a protective effect against cancer in the endometrium and ovary)
Ethanol in alcoholic beverages
Ethylene oxide
Etoposide
Etoposide in combination with cisplatin and bleomycin
Carcinogens in food
Cancer Invest 2007-2009

• Aflatoxins
• Alcohol
• TCDD (Dioxin)
• Salted fish
• Acetaldehyde
• Aromatic hydrocarbons
• Nitrosamines
• Hot Maté
• DDT
• Mold (Aspergillus, Fusarium etc)
• Heterocyclic amines
• Coffee (highest conc of pesticides and insecticides per kg)
• Pickled vegetables
• Acrylamide (drinking water)

Filtered water, organic food, avoid plastic
Hormone dependant receptors

- p180
- Estrogen ER
- Progesterone PR
- Dihydrotestosterone DHT
- Androgen NR2C4-A and –B

- Anti-hormone
- Obesity
- Food
- Xeno-Estrogens
- Mercury
- Fermented soy
- Pollutants
- DIM, I-3-C
“NATURAL” TREATMENTS

• LIFESTYLE
• NUTRITION
• MICRONUTRIENTS
• HERBS (WESTERN HERBS, AYURVEDIC, TCM)
• TABLETS, CAPSULES, INJECTIONS
• BIOPHYSICAL (ACUPUNCTURE, EMF ETC)
• MIND
• SPIRITUAL
Natural Health Products that inhibit angiogenesis


Tested by Maintrac

Artemisia annua
Quercetin
Resveratrol
ImmunPlus6-Shogaol
Lektins (Mistletoe)
Vitamin D3
Curcumin
Green Tea
Selenium
VITAMIN C AND CANCER?

Active and Supportive treatments
What About Cancer?

Controversies?

• Still very common to hear that Vitamin C/antioxidants should not be given with chemo or radiation because they are antagonistic. This is very confusing for patients.

• Animal and human clinical evidence does not support this idea of antagonism. Nothing CLINICAL published to date that shows antagonism.

• Human clinical trials in combination with chemo are rapidly increasing in number every year. Now Vit C in combination with radiation trials are appearing.
VITAMIN C

• IVC has significant published research in cancer treatment.

• *Even the National cancer institute, part of the NIH in the USA, says that Vitamin C as an adjunct to cancer treatment*
  – Does not interfere with medical therapies.
  – Improves quality of life and toxicity from medical therapies.

clinicaltrials.gov - IVC in cancer

- With chemotherapy 20+
- Sole treatment 11+
- With radiation therapy 4
What About Cancer?

- IVC Doses in current trials:
  - Chemo – 60g – 100g +
    - Same time as chemo or after chemo.
  - Radiation therapy 80g +
    - Before, During and After Radiation.
Effect of Natural Therapies

• Improving effectiveness of anti-cancer treatment
  – Consider timing and possible interactions
• Reducing symptoms
• Increasing QoL
• Improving immune response mechanisms
Natural “anti-cancer” treatments

• Direct cytotoxic therapies
  – Curcumin as IV
    • Lots of in vitro evidence
    • Lots of practitioner experience
    • Human trials are ongoing
      – Very encouraging results
  – Other bioflavonoids
    • Ginger, Resveratrol, Quercetin,
Testing for “sensitivity”

• Direct cytotoxic assays
  – Question to the lab: has the substance (with the chosen therapeutic concentration) the ability to kill cancer cells
  • The Maintrac CTC test is the only test which can test the effectiveness of a substance on live tumour cells
  • Other test methods use gene mutations and their statistics or use RNA methods.
    – Not using therapeutic concentration
Chemo-sensitivity

J Cancer Therapy 2013, 4:597-605

Chemosensitivity Testing of Circulating Epithelial Tumor Cells (CETC) in Vitro: Correlation to in Vivo Sensitivity and Clinical Outcome.
Cell decay of CTCs over time in the presence of a drug

t=1 hr.  
t=3,5 hrs.  
t=7 hrs.  
t=10,5 hrs.

Docetaxel

Epirubicin

Mafosfamid
Cytotoxicity Assays (Chemosensitivity)
To BOTANICAL MEDICINES

Vitamin C

B17/Amygdalin/Laetrile

Curcumin
Bayreuth, 14.03.2017

Therapist

Your patient:

Born:

Your request from: 08.03.2017
Our Lab number: 1731890

mail:

Report on diagnostic findings on Circulating Tumor Cells (MAINTRAC)

Dear Dr.:

Many thanks for sending your examination request regarding the detection of circulating tumor cells. After Therapy.

Diagnosis:
Colon Cancer, Initial diagnosis: 08/15
- 1. Therapy: Mexico, Oasis of Hope 3 visits
  Therapy: B17, Prosignalin, Xeloda, Curcumin
- 10/15-07/16: DCA, Vitamin C
- until: 10/16: Ozone, Boswellia, Hypertermia
- 11/16: Surgery (Removal of remaining tumor 5mm)

The automated microfluorimetric image analysis of the epithelial cell adhesion molecule (EpCAM) positive cells with visual control (MAINTRAC) from 1 ml EDTA blood resulted in following findings (detection limit is at 10 cells/ml):

<table>
<thead>
<tr>
<th>Number of potential tumor cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examination parameter</td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>EpCAM</td>
</tr>
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</table>

in-vitro-vitality reduction in relation to concentration and time (in %) with eutherapeutic concentrations of

<table>
<thead>
<tr>
<th>Vitamin C</th>
<th>DCA</th>
<th>Curcumina*</th>
<th>Prosignalin*</th>
<th>Boswellia*</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>60</td>
<td>40</td>
<td>85</td>
<td>60</td>
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</tbody>
</table>

*provided by the patient

The ideal is a reduction by 100% in short term cell culture
Patients total: 56

<table>
<thead>
<tr>
<th>Sensitivity</th>
<th>Number of Patients</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>&gt; 50%</td>
<td>25 Patients</td>
<td>45%</td>
</tr>
<tr>
<td>&lt; 50%</td>
<td>31 Patients</td>
<td>55%</td>
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</table>
Patients total: 63

<table>
<thead>
<tr>
<th>Sensitivity &gt; 50%</th>
<th>42 Patients</th>
<th>67%</th>
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</thead>
<tbody>
<tr>
<td>Sensitivity &lt; 50%</td>
<td>21 Patients</td>
<td>33%</td>
</tr>
</tbody>
</table>
Curcumin

Patientenanzahl

Ansprechraten%

Patients total: 52

<table>
<thead>
<tr>
<th>Sensitivity &gt; 50%</th>
<th>39 Patients</th>
<th>75%</th>
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</thead>
<tbody>
<tr>
<td>Sensitivity &lt; 50%</td>
<td>13 Patients</td>
<td>25%</td>
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</tbody>
</table>
Tumour Spheres - Culture

San Antonio Breast Cancer Symposium - Cancer Therapy and Research Center at UT Health Science Center – December 10-14, 2013

Determination of vital and dead EpCAM positive cells among the white blood cells

1 ml EDTA Blood

Lysis of red blood cells

One centrifugation step

Culture of all white blood cells under conditions favouring growth of epithelial cells and determination of sphere formation at different times of culture

Determination of vital and dead EpCAM positive cells among the white blood cells
Tumorspheres from CTCs

Spheres were detected in 86 of 109 patients (78.9%); Number of spheres varied between 50 and 1700/ml (Median 200) All spheres detected are positive for EpCAM.
Chemosensitivity of tumour spheroids vs. CETC
Examples of tumourspheres with chemoresistance to cyclophosphamide, 5-fluorouracil, paclitaxel and docetaxel. Tumourspheres remain alive during short time culture (0-9h).

<table>
<thead>
<tr>
<th></th>
<th>t=0.5h</th>
<th>t=3h</th>
<th>t=6h</th>
<th>t=9h</th>
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<tbody>
<tr>
<td>control</td>
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<td>cyclophosphamide</td>
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<tr>
<td>5-fluorouracil</td>
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<td>paclitaxel</td>
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<tr>
<td>docetaxel</td>
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<tr>
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<td>salinomycin</td>
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<tr>
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<td><img src="image35" alt="Image" /></td>
<td><img src="image36" alt="Image" /></td>
</tr>
</tbody>
</table>

Tumourspheres sensitive to carboplatin, epirubicin, salinomycin and curcumin. Carboplatin and epirubicin lead to disintegration of tumourspheres with destruction of part of the cells in the spheroids. The strong cytotoxic effect of salinomycin is already observed at the first point of measurement with almost total destruction of all cells. Curcumin works by inducing cell death in all cells of the tumourspheres leading to nuclear staining with propidium iodide.
Maintrac CTC Testing

for

Early Detection (Screening?)
136 Patients without Diagnosis significant risk factors

CETC count in 136 patients

No of Patients
No of Patients
136 Patients without Diagnosis significant risk factors

87 Patients  CETC < 450
49 Patients  CETC > 500
6 Diagnoses

6 x Cancer Diagnosed, histologically

5 x Persons with Cancer

1 x Person with BC

After increase to 1900
Results of CTC

- 0
  - No known risk
  - 12 months

- 0 - 500
  - Known risk
  - 3 months

- 500 – 1500
  - Prevention Rx
  - 6 months

- > 1500
  - Intensive Prevention Rx
  - 2-3 month
Results of CTC Treatment

- **CTC Count**
  - 0
  - 0 - 500
  - 500 – 1500
  - > 1500

**Prevention Strategies**

**Prevention Program**
- Level 1
- Level 2

**Investigation**
- Scans, Tests

**Active Intervention Program**
The Effect of Natural Therapies and CTC Testing on Patients with Cancer

Dr. Joachim Fluhrer MBBS (UniSyd) FACNEM, FSAARMM

AONM Webinar Aug 2020