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A Possibility to Prevent Recurrent Melanoma, Renal, Breast and Prostate Cancer Utilizing Inexpensive Powders Containing Specific Dietary Supplementary Factors

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This special technique, devised at the Pasteur Institute (1967), is the only one which fulfills all requirements to be placed on a tumour vaccine.

Introduction

This article is basically a review, describing the development of a combined biological and immunological cancer treatment modality called "bio-immunotherapy".

Numerous epidemiologic, experimental and clinical observations indicate that one important aetiological factor in cancer is founded on a chronic metabolic deficiency. Spontaneous regression of cancer, *the metabolic triumph of the host* (Cole 1974) signals that malignant cells can revert to healthy normal function if the physiologic bodily internal balance of the patient is restored [Table 1]. This active dietary compensation of pertinent metabolic deficiencies linked to specific cancer forms can help us prevent recurrent disease. In bio-immunotherapy this longstanding, complex metabolic and immunologic deficiency, leading to malignant cells, has successfully been compensated in patients suffering from certain cancer forms, i.e. renal- breast- prostate cancer, and melanoma, as described in this article. The treatment has resulted in significantly improved survival and disease-free intervals (Tallberg 2003). Cancer "genomics", "proteomics" and especially "lipidomics" i.e. the billions of lipids in the central nervous system are all involved in controlling the disease. The aim of this long study was to analyze, learn to simulate, and then to tie together these bio-modulating metabolic factors the ingestion of which, by chance, must have been responsible for the reported but rare *"mysterious cures"*.

There seems to be a possibility to postpone, or actually to prevent recurrent disease using ready made powders containing all the necessary metabolic components required to compensate the metabolic deficiency in specific forms of cancer, and for psoriasis where the skin cells are dividing at an increased rate. This study describes the scientific approach involved in the search for bio-modulating factors, whereby the complex aetiological metabolic deficiency leading to cancer can be compensated. These efforts have led to clinical possibilities to treat and prevent recurrent cancer using truly physiological medical means.

This biological cancer therapy is specifically improved by immunological stimulation utilizing the patients´ polymerised tumour material (Avrameas 1967) as vaccines (Tallberg 1979 & 1991). Autologous tumour tissue represents a fingerprint of the individual antigenic markers present. Therefore tumour tissue should, whenever possible, be saved by the surgeon to be procured into a specific cancer vaccine for the patient. Although, cancer is not basically an immunological disease (Tallberg Th. 2001) this personal vaccine may prevent the spread of circulating malignant cells, which may cause metastases, and furthermore confine the tumour mass. Dietary correction of the aetiological metabolic deficiency would then be given time to be corrected, and thereby prevent the emergence of new malignant cells.

Table 1.

A. The basic incentive for studies involving biological and immunological cancer therapies was the indisputable fact that tumours may spontaneously regress.

B. This implies that mammals possess a natural intrinsic regulatory capability to control the differentiation of specialized organ cells. Bio-immunotherapy strives to delineate and apply such natural medical factors in cancer therapy and prevention. Invasive treatments remove only the symptoms of this metabolic deficiency, and therefore malignant cells may recur.

C. The main challenge for modern medicine is thus to learn to actively simulate, apply and perceive to harness the "biologic response modifiers" which cause spontaneous cures.

Efforts to correct the etiological metabolic deficiency causing cancer

Since no laboratory test can reveal the severity of this metabolic dysfunction long empirical trials had to be undertaken, as mammalian cancer control is subject to possibilities to biologically compensate this etiological metabolic deficiency causing malignant cell transformation. Cancer cures and prevention of recurrent disease has been achieved by dietary means (Fig.2,4,5).

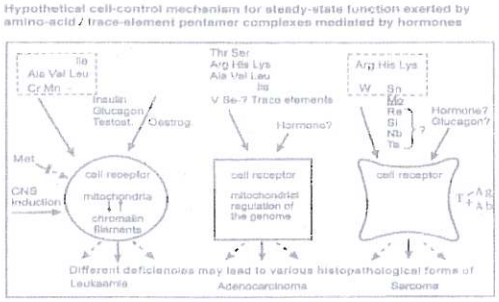
A supplementary metabolic dietary treatment can even alone heal malignancies. Such a nutritional effect is highly unlikely to encounter a patient by chance but can be sought by active simulation. The need to delineate these specific etiological metabolic dietary components in mammals, necessary to restore the interior metabolic balance in the

4

patient, became thus imperative.

No laboratory method is capable of analyzing for crucial metabolic complexes lacking in cancer patients. One important metabolic vector seems to be structured as a "pentameric" dietary code composed of essential amino acid and trace element complexes, with the billions of CNS-lipids "the lipidome" inducing cell-receptors to accept the message, thereby activating organ specific gene-regulatory and reparatory mitochondria, which in concert with hormones form the physiological medical feed-back cycle sustaining normal health. The dietary supplementation can result in regained physiological cell-control function in the cancer patient, prevent recurrent disease and cure; leukaemia, adenocarcinoma & sarcoma (fig.1).

Figure 1



Selective deficiencies in these pentamer codes may be expressed as various histopathological forms of cancer. Dietary restriction of methionine is prescribed, since it seems to be a growth factor for leukaemic stem cells.

After over thirty years of empirical studies, certain of these supplementary essential biological dietary components have been characterised (Tallberg 2003). The amino acids were selected from the seven chemical groups of amino acids. The biological effect of certain amino acids is mainly elicited in complex with specific essential trace element metal ions. Empiric selection of organic and inorganic bio-modulating complexes was sought as listed in Table 2.

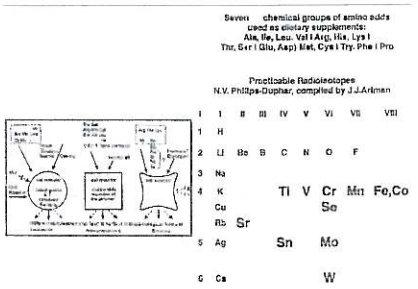
Cancer patients should avoid ingesting certain natural dietary components

Certain amino acids and essential metal ions may act as growth factors for primitive malignant cells. Cancer patients should therefore avoid ingesting everything bought from the health food stores, since that could introduce specific cancer growth factors. The metabolic deficiency to be corrected in cancer is not caused by starvation but actually due to the lack of a few very specific dietary components forming the regulatory complexes in the patients´ serum.

In the rat leukaemia study, it became evident that methionine was a growth factor for malignant white cells (Tallberg 1998) and valine for B-lymphoma. Based on preliminary clinical observations Ala may furthermore be deleterious for patients suffering from cancer of the prostate (CaP), Ile for neurofibromatosis, Zn for renal cell cancer, Mo for breast cancer etc. Based on FAO´s comprehensive publication (Food and Agriculture Organisation of the United Nations, 1970 & 1972) on Amino-acid Content of Foods and Biological Data on Proteins, lists of foods recommended, containing an especially lean content of deleterious food items are available from The Institute of Bio-Immunotherapy on request to guide patients in selecting a safe diet. To prevent the reestablishment of patients´ metabolic deficiency the dietary supplementation should be sustained for years, since the deficiency may be aggravated as a function of time. A genetic weakness would naturally require a lifelong substitution (but for a cost of some euros a day) involving ingestion of the pertinent metabolic factors to prevent malignant transformation. Healthy persons would get sufficient amounts of these from their normal diet.

Table 2.

Selection of dietary amino acids and trace-elementsrequired to compensate the metabolic deficiency leading to different forms of cancer



The essential trace-elements involved (in bold) are situated fairly close to each other in the periodic system, probably since the biological complex they form with pertinent amino acids shape the signal system for healthy mammalian cell-receptors.

Specific stimulation of the patients´ immunity towards tumour markers

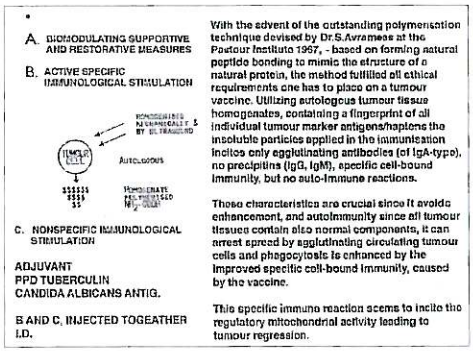
Active specific autologous immunotherapy improved the clinical results. The patients´ own tumour material (10-20g), *the fingerprint of all tumour markers,* should always be saved at surgery. It can be procured into individual vaccines utilizing natural peptide bonds using the outstanding polymerisation technique devised by Dr. S. Avrameas, (1967). This is the only method which fulfils all requirements to be placed on a tumour vaccine (Tallberg et al 1979). Characteristics of such autologous cancer vaccines are presented in Table 3.

Based on this new paradigm, representing a truly physiological medical cancer therapy modality, formed by this combined biological and specific immunological stimulation, it can force back tumour cells into normal healthy function, without apoptosis or tumour cell destruction.

Specific powders have now been compiled, containing the metabolic supplementary components required in bio-immunotherapy, and especially for the prevention of recurrent disease in patients suffering from *malignant melanoma, renal cancer, or prostate cancer* (CaP). The composition of the dietary supplements for these cancer forms is presented in; Tables 4.5.6. The expense is minimal since they contain only natural components. The effect in randomized prospective clinical studies with hundreds of patients in bio-immunotherapy have shown improved clinical results, p = 0.001, (Tallberg et al 1991; 1985, Tykkä 1981). All metabolic components involved are natural substances, and thus ethical, evoke no side-effects, are easy to administer, possess a long shelf life at dry room temperature, and their use does not require a FDA approval! These powders can be purchased from the Institute of Bio-immunotherapy to be used in scientific clinical studies.

Table3.

Autologous tumour vaccine preparation



Cutaneous and uveal malignant melanoma in bio-imunotherapy

A previous study in the Czech Republic was very encouraging (Tallberg et al 1991) [fig.2]. In a randomized prospective study comprising 103 skin melanoma patients (Stage I-II), ten patients had died in the placebo treatment group [Fig 2.] before the first succumbed in the supportive biotherapy group (Table 4.; sections 1-5 forming the biological dietary supplements). Patients with recurrent disease died in 16 months (median). In full bio-immunotherapy (Stage III-IV) only three died, (Tallberg et al 1986; 1991) but with a median follow-up of over 60 months [Fig 5] [13].

Australia and the Czech Republic have surprisingly the highest melanoma incidences in the world. This could hardly be due to the sun, since Czechs´ did not travel to sunny beaches during the communist regime. A genetic weakness could be harboured in the Czech population but the mixed Australian population excludes that reason. A common denominator could be an endemic deficiency encompassing certain trace element salts and amino acids in the soil. This could slowly cause a deficiency of essential components in the patients´ melanocytes. Any chronic irritation, like the sunburn of the skin, could then cause malignant

transformation. (This environmental deficiency is certainly slightly more complex than the iodine deficiency causing endemic goitre). The schedule for full bio-immunotherapy with skin melanoma patients is presented in Table 4. Patients suffering from recurrent cutaneous melanoma, stage III and IV, survived significantly longer in bio-immunotherapy than patients in standard therapy (Tallberg and Dabek 2001).

High risk T3 uveal melanoma patients have now been in bio-immunotherapy with a median follow-up of over 140 months. Of nine cases treated, eight are living in good clinical condition (Tallberg et al 2000; 2001). Only one died but survived for 96 months. She stopped taking the supportive dietary components 1½ year before she died of recurrent disease. Of the 16 control cases in standard therapy only two are alive while 14 are dead. In comparison with 8 living and only one patient dead [8/1], against 2/14 with fourteen dead there is a, $p<0.001$. The general survival rate of T3 uveal melanoma patients in Finland (Summanen et al 1993) has been published (fig. 3). Figure 7b illustrates how electron dense mitochondria are surrounding the nucleus of a skin melanoma cell in bio-immunotherapy with complete regression - healing without apoptosis (Tallberg et al 2002).

One uveal melanoma patient with a small peripheral choroideal tumour (stage II) received standard brachytherapy 1996, followed by our supplementary dietary components for three years. She then stopped the intake of these specific dietary supplements. Four years later, 2004 she was found to have multiple subcutaneous melanoma metastases. Metastases were also found in both her lungs as well as one in her adrenal gland. Uninterrupted continuation of dietary supplementation is therefore now recommended for all patients. Recurrent disease has successfully been forestalled in all T3 uveal melanoma patients, (with one additional T3 case with a follow-up of only 24 months; August 2005) as long as they continuously ingest the specific dietary components (Table 4, section 1-5). These metabolic components are now also contained in ready made powders to simplify the daily intake of the therapy.

The clinical effect of the melanoma powder [see, Table 4. sections 1-5] without the use of tumour vaccines is presently suggested to be tested in Australia. The aim is to study if recurrent malignant transformation can be prevented by biological means in an endemic area suffering from such a high melanoma incidence.

Table 4.

Bio-Immunotherapy schedule for cutaneous and uveal melanoma

Supportive dietary measures started at diagnosis of melanoma

1 Oral administration (of approximately 5g/day) of L-amino acids: Ala,Asp,Ile,Lys, and Gly,Glu, together with a small dose of aspirin (50-100 mg/day).

2 Essential trace-elements administered orally as biologically active salts: Cr,Mg,Se,Sn,V,W, (Na2WO4 . 2H2O), as mg's /day.

3 Physiological doses of vitamins: A,B,C,D,E,K and folic acid 2mg/day.

4 Repeated vaccinations against Influenza A and B strains.

5 Diet containing neurogenic lipids such as ice-cream (cooked brain from healthy pigs, available as canned food, Neurofood ltd Helsinki).

Specific active immunisation against tumour marker antigens

6 Immunisation using autologous tumour polymer particles, (procured by natural peptide bonding of tumour marker antigens according to S.Avrameas), with tuberculin (PPD) as adjuvant.

Table 4. (see below left)

Figure 2. (see page 9)

Figure 3. (see page 9)

Renal cell adenocarcinoma in bio-immunotherapy

Usually, renal cancer has already metastasised in 25% of the unfortunate cases when the diagnosis is finally made. The prognosis is then dismal, with median survival rates of only 11.1 months (Flannigan et al 2001). In bio-immunotherapy survival was significantly improved ($p < 0.001$) with 127 patients (Tykkä 1981). Clinical results have continuously gotten better [fig.4]. Supportive dietary bio-modulating measures alone improved also the survival rate, $p = 0.04$ [fig 5] (Tallberg and Dabek 2001). The treatment schedule is schematically presented in Table 5.

During these last years (2004-2005) a patient suffering from metastasized renal cell carcinoma, diagnosed with multiple lung metastases has been cured, as in numerous other cases since the seventies (Tallberg 1974; Tallberg and Dabek 2001).

Bio-immunotherapy schedule for renal cell carcinoma

Supportive dietary measures started prior to surgery

1. Oral administration (of approximately 5g/day) of L-amino acids: Ala,Arg,Asp,Lys and Ser.

2. Essential trace-elements administered orally as biological active ions: Cr,Mo,Se,Sn,V, as mg's/day & Mn (manganese glycerophosphate) as 100 mg's/day.

3. Physiological doses of vitamins: A,B,C,D,E,K, and folic acid 2mg/day.

4. Diet containing neurogenic lipids such as ice-cream, cooked brain from healthy pigs, available as canned food (Neurofood ltd).

5. Patients should avoid foods and vitamin preparations rich in zinc (possibly a growth factor for renal adenocarcinoma cells).

Specific active immunisation against tumour marker antigens

6. Immunisation using autologous tumour polymer particles (tumour antigens polymerised via peptide bonds as deviced by S.Avrameas at the Pasteur institute), admixed with tuberculin (PPD) as adjuvant, injected intradermally at 4-6weeks intervals.

Table 5.

Figures 4 & 5.(see page 9)

Renal cell cancer in full bio-immunotherapy
Renal cancer in dietary supplementation alone

Cancer of the prostate gland, etiological and prognostic factors

CaP seems to represent a deficiency of an adrenal zona reticularis (ZR) component [´s?] (fig.6).

Several findings and clinical reactions supporting this deduction have been presented previously (Tallberg et al 2003).

Dietary supplementation as well as hormone therapy activates the adrenal feed-back cycle arresting the progress of CaP. This positive feed-back cycle is registered as an increase in the patients FSH level with a concomitant decrease in DHEAS, [i.e. sulphonation of DHEA]. The most important project would now be to purify these ZR components, e.g. extracted from forensic human adrenal tissue material. Such a biological material could form a physiologic substitution therapy for CaP, like insulin acts in diabetics. CaP is exceptionally not improved by active autologous immunotherapy, although the level of the metabolite "PSA" may decrease for some months. PSA does not seem to be a regular tumour marker on prostate cells. Prescription of the amino acid, Serine (as PSA is a serine protease) and the trace elements listed (+ strontium which seems to prevent bone metastases) are especially beneficial [Table 6] in delaying the progress of the disease alone, as well as in synergy with intermittent administration of LHRH analogues.

With the advent of the ready made powders containing all metabolic components possibly required to arrest the progress of CaP [Table 6], it is unethical to suggest to patients simply to "wait and see" (= a modern form of Russian roulette) because then the etiologic metabolic deficiency can not actively be compensated and the disease will be reactivated and recur. For the over 4000 new cases of CaP detected every year in Finland, a non-invasive and inexpensive treatment like this one suggested, entailing no side-effects, could save lives, as 800 patients die every year (compared with the 35.000 in USA), and decrease general health care expenses thereby saving tens of millions of euros every year.

For patients that require hormone analogue treatment (e.g. Zoladex 3.6mg) this hormone treatment should be performed according to a short time intermittent schedule to avoid causing a hormone-refractory prostate cancer, HRPC (Tallberg 1998, 2003). The treatment schedule is presented in Table 6. The prognosis is improved as serum FSH and/or prolactin levels become elevated, the DHEA and especially DHEAS levels decreases [Table 7, patients 2,4,5,6. Case No.9 was treated by orchiectomy. Patient No.10 died when his FSH and LH levels became undetectable signaling final exhaustion of the feed-back reaction activated by the adrenal ZR cells (Tallberg 2003).

Figure 6. (see page 9)

Table 6.

Dietary bio-modulation schedule for treatment of prostate cancer patients

Supportive dietary measures.

1 Oral administration of each (2.5 g/day) of respective L-amino acids: Arg, Asp, Glu, Gly, Lys, & Ser, all in connection with meals.

2 Essential trace element salts prescribed orally as biologically active ions, at dose levels of some milligrams (1-3mg/day): Chromium (CrCl3.6H2O) 6 mg (= 1.17 mg Cr), Tin ([illegible]) 4 mg (= 1.38 mg Sn), Strontium ([illegible]) 0.1 mg - 7 mg (-2 mg Sr), Vanadine (Na3VO4.4H2O), 5 mg (= 2.5 mg V), Wolfram (Na2WO4.2H2O), 4 mg (= 2.3 mg W).

3 [Sr supplementation is applied to patients who have been orchiectomized.]

4 Small physiologic amounts of vitamins: A, B, C, D, E, K, folic acid (2 mg/d) and lycopene.

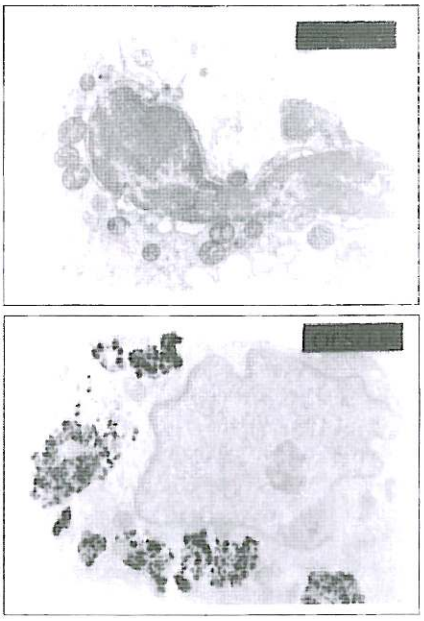
5 To improve lymphopoiesis and the immunodefence of patients a diet containing prion free neurogenic lipids equivalent to approx. 50 g of brain was recommended, (purchased and canned by Neurofood Ltd Finland).

6 All these dietary ingredients can be mixed together in yoghurt, forming a daily ration, using pre-packed powders.

7 Dose-levels are individually adjusted based on clinical response as measured during therapy correlated to stage, age and the patients' body weight.

Footnote: This formulation is the intellectual property of The Helsinki Institute of Bio-Immunotherapy Ltd.

Figure 7 a & b. Electron microscopy of tumour cell nucleus surrounded by electron dense organ-specific mitochondria while healing without apoptosis.



a) A prostate cancer patient in biotherapy. The tumour cell nucleus is surrounded by transformed (electron-dense) mitochondria while healing without apoptosis or cell lysis. Two mitochondria seem to empty their electron dense material into the nucleus.

b) Melanoma cell nucleus surrounded by numerous electron-dense transformed mitochondria, while healing in bio-immunotherapy.

The rare cases of CaP which were detected from soft tissue metastases showed exceptionally elevated PSA levels; of 10070, or 246 µg/L, paired with extremely high serum activin levels; of 2900 pg/ml and 1850 pg/ml respectively. Following intermittent LHRH analogue and dietary supportive treatment the PSA levels fell to 5.3 and 2.3 µg/L and metastases regressed. Patients do not die of a high PSA as long as DHEAS and DHEA levels are declining and FSH stays normal, or at increased levels.

In orchiectomized patients the FSH level increased when PSA fell. The inhibin levels decreased markedly (<7.8 pg/ml) while the activin stayed normal (330-500 pg/ml).

This same shift to a low inhibin level was seen during normal pregnancy, but more surprisingly also in postmenopausal patients on supplementary oestrogen therapy (50µg/day). Healthy females prescribed oestrogen substitution therapy should therefore demand to be analyzed for their inhibin/activin correlation values based on a simple serum analysis! The increasing breast cancer and lymphoma incidence in western countries could stem from this widespread use of ***"preventive"*** oestrogen substitution therapy. If it provokes a biological reaction pattern simulating pregnancy it may not be harmless. Females harbour during normal pregnancy a growing cell-mass – the healthy child – but the shift in the activin/inhibin reaction (simulating that of a castrated man) normalizes after parturition. In a postmenopausal lady, her body may not understand this shift to pregnancy levels, regarding these growth factors, eventually caused by oestrogen substitution therapy and her body could thus be fooled (provoked) to produce proliferating, potentially malignant cells. Assays to measure activin/inhibin correlation values may indicate the danger (Tallberg 2000).

Table 7.

Laboratory assays from patients´ suffering from prostate cancer.

Patient	FSH	LH	PRL	DHEA	DHEAS	Testost	Inhibin	Activin	S-Ferrit	SHBG	PSA
No 2.	10.6	13.4	242	6.3	3.9	7.6	66	790	135	27	14.4
	10.0	12.8	241	4.0	3.3	-	63	550	66	-	13.0
No 4.	75.0	53.0	224	20.9	2.3	6.7	-	-	20	30	29.8
	13.0	0.1	122	2.9	1.5	10.0	(TSH 9.8)		60	34	2.9
No 6.	2.3	3.9	392	3.4	1.1	12.3	197	92	33	43	< 1.0
	2.1	2.4	565	2.8-2.4 <2	<0.8	9.8-8.9	-	-	41	37	1.7/12.5
No 8.	15.2	10.1	903	3.6	2.4	8.4	75	410	1500	45	13.4
	4.2	7.3	1400	2.5	1.6	5.8	72	430	1100	-	2.5
	15.2	17.7	1520	2.2	< 0.8	-	76	500	920	-	14.6
No 9.	68	27	92	<2.0	<0.8	1.0	< 7.8	330	109	53	<0.1
	45	18	150	<2.0	<0.8	-	-	-	92	68	< 0.2
	33	13	85	<2.0	<0.8	-	-	-	125	61	< 0.2
	48	16	91	<2.0	<0.8	-	-	-	91	62	<0.1
No 10.	0.1	0.1	1050	7.2	6.8	0.6	-	-	2145	-	364/V17/

A formulation for dietary supplementation with *breast cancer* patients, in full bio-immunotherapy, is in a test phase. This formula has also been applied to try to prevent recurrent disease after surgery, since the invasive therapy may only have removed the actual symptoms of this deficiency disease. Prevention of recurrent breast cancer is important since the disease has at that stage an unfavourable prognosis. There is a suspicion that the hidden etiologic metabolic aberration can become aggravated, as a function of time, especially since no effort has been made to compensate the etiological deficiency. This inactivity may lead to recurrent cancer.

Especial functional diets may also alleviate diseases of a non-malignant nature

Certain cancer patients in successful bio-immunotherapy have also suffered for years from psoriasis, and were surprised that their skin ailment disappeared. The increased cell division of skin cells seems to be a crucial factor in this disease - as in many cancers. One of the alleviating dietary factors for psoriasis seems to be the amino acid isoleucine (Ile). Other natural components are also involved as co-factors in this healing process. A composition of these non-toxic dietary ingredients showing certain promising clinical results have been prepared for patients, in the form of a single powder to simplify the administration. The formula is given in Table 8.

Table 8.

Bio-immunotherapy schedule suggested for patients suffering from psoriasis

1 Oral administration of the amino acids; Arg, Glu, Gly, Ile, & Ser.

2 Essential trace-element salts prescribed as biologically active ions at dose levels of some mg´s (1-3mg/day); Cr (1.17mg); Se (200µg); Sn (tin, 1.35mg); V (2.5mg); W (2.3mg); and Mn (45.5mg).

3 Small physiologic amounts of vitamins, especially folic acid 1mg/day are prescribed.

4 To improve lymphopoiesis patients are suggested a diet containing prion-free neurogenic (CNS) lipids mixed with assorted fruits, equivalent to 50g /day, produced from healthy piglets and canned by Neurofood Inc. Finland, containing 220g/ can.

5 All dietary ingredients are available as pre-packed powders from the Institute for Bio-Immunotherapy. The CNS lipids have to be ingested separately mixed with fruits. It is available as canned healthy piglet CNS lipids, produced by Neurofood Ltd. Helsinki.

Recommended duration for dietary measures and the use of autologous vaccines are long

The chronic metabolic deficiency causing cancer seems to exacerbate as a function of time, consequently requiring slightly increased dosages of the dietary supplementation, for every decade in therapy, to sustain the patients´ heath. Efforts to compensate the etiologic metabolic deficiency in cancer patients´ should preferably start already when diagnoses are made and before surgery. Even a partial compensation of the metabolic deficiency can decrease the risk of spread and implantation metastases, also it seems to shorten the convalescence.

The administration of a small surplus of certain essential natural food components *can also compensate genetic weaknesses*, as has been shown in cases suffering from e.g. HNPCC (Tallberg 2003), or BRCA. The notion that one could compensate genetic weaknesses in patients was important. It seems to simply be achieved by supplying these individuals with small amounts of specific natural "functional food" components. Normal healthy persons get sufficient amounts of these alimentary constituents from their daily food intake. The alternative treatment - active gene therapy - which precisely should correct the aberrations located in three different genes (as in e.g. HNPCC) would technically be extremely difficult to achieve. Genetic weaknesses are increasingly detected and may even lead to mutilating surgical prophylactic treatments in the form of unnecessary mastectomies + ovariectomies (BRCA-1), or colostomies plus

excision of the urinary bladder, since they are both target organs in this genetic HNPCC weakness. The possibility to compensate an inherited aberration by biological means should therefore be taken into account, and acted on. Trials to actively biologically compensate, instead of attempting to correct inherited genetic ailments (encompassing faults in several genes), deserve more attention. If gene therapies ever become successful in adults, it would be a too expensive treatment modality for world populations, presently suffering from ever increasing cancer incidences.

Discussion

The explanation for the complete regression of tumours following bio-immunotherapy was hard to find. No consistent tumour-specific immunological reaction could be detected to explain the complete regression (CR) observed. Inconclusive evidence was obtained from extensive immunological screening for circulating and / or cell-bound immunity, cytolytic antibodies, effector T-cells, macrophage inhibitor factor, natural killer cells, killer cell indexes, tumour cell lysis, apoptosis, phospholipase or complement activation, enhanced interferon production or chalone reactions etc.(Tallberg et al 1979).

Diverse biological functions expressed by mitochondria could explain the regression of cancer

During the healing reaction obtained in bio-immunotherapy it was found that organ-specific mitochondria became activated (Tallberg et al 1998; 2000 & 2001; 2002). They seem to have both a *reparatory* and *regulatory* function over the genome. The notion that mitochondria also may repair mutations in genes is supported by the recent and interesting genetic study with the Arabidopsis plant where homozygous mutated hothead genes reverted to normal in 10% of the plants offspring, although no cryptic genome backup copies could be found (Lolle et al 2005). The authors of this study postulate that the genetic restoration was the result of a template-directed process using an ancestral RNA-sequence cache. An alternative explanation would be that this startling repair of mutations´ may indicate that mitochondria, as the creator of the nucleotide sequence-analogies in mammalian chromosomes, may possess a memory of the right ancestral sequence they have formed. This mitochondrial *reparative* function may be activated during cell division and embryogenesis to revert mutations back to their original healthy steady state function. This alternative explanation for this novel finding would not necessarily rock George Mendels´ laws, but could shed further light on these prime mitochondrial functions, involving perhaps also activation of retrotransposons (Muotri et al 2005) as a vector relating to their reparatory "evolutionary" capacity.

Mammalian genes [22.000] are too few to explain the complex, time-linked physiological expression leading to health and senescence. The human chromosomal nucleotide sequence analogy with monkeys and rats (99%; 96%) is surprising. This suggests that mitochondria have created the chromosomes during eons of their phylogenetic toil, and would thereby also primarily be responsible for the evolution of all living organisms. Thus chromosomes represent a "memory of evolution" rather than forming "the secret of life", as previously suggested. ". In this relation Darwinism seems to be the truly important, but secondary evolutionary selection system (Tallberg 2000, 2001, 2005). The nucleotide analogy in living organisms would not be there if evolution was purely based on random mutations.

Mitochondrial action in cancer seems in the first instance to be gene-regulatory (fig.7a & b) and possibly also reparative (Tallberg 2000). Biologically activated *gene-regulatory* mitochondria become electron dense (fig. 7a & b) due to an increase of metallo-enzymes gathering in their cristae [Table 9] (Tallberg et al 2002).

In bio-immunotherapy this combined therapeutic biological and immunological treatment modality is aimed to simulate the specific regulatory codes for; leukaemia, adenocarcinoma or sarcoma (fig.1). In mammals (in rats and horses) this non-toxic medical treatment has resulted in cancer cures (Kinnunen et al 1999). In this healing reaction mitochondria in the vicinity of the intact tumour cell nucleus (Tallberg et al 1996; 1998) are seen to be transformed (fig.7). They become electron-dense (Tallberg et al 2002), as their cristae and matrix gather metallo-enzymes (Cr,Fe,Ti,Zn). This inductional signal, shown to be biologically active at body temperature [preventing leukaemia induction in rats] (Tallberg et al 2002), may then be transported to the chromosomes by strontium (Sr) through the nuclear membrane [Table 9]. Therefore, Sr is also seen to be depleted in these transformed mitochondria (Tallberg 2003), as analysed by inductively coupled plasma mass spectrometry (ICP-MS). This physiologic mammalian healing process resembles "mysterious" spontaneous cures (Tallberg 2003).

Low temperature inactivates gene-regulatory mitochondria (Tallberg et al 2002). In former times, blood donors were transferring warm blood to the recipient, and surgeons observed then that the cancer growth stopped for a while. Warm plasma from immune rats could also inhibit leukaemia induction (Tallberg et al 1986). As mammals are warm-blooded, the mitochondrial function seems to require body temperatures to act properly? Mitochondria are also responsible for the processing and turnover of biological substances in mammals, and putrefaction in the soil. Certain test-animals have not been able to sustain health if fed only specific gene manipulated food-items, possibly since their mitochondria do not recognize them to belong in their (phylogenetic) nucleotide repertoire. Gene manipulation of foods may not be accepted biologically by our digestive system, since the product may transcend the evolutionary biological nucleotide sequences created, as produced and coded by mitochondria (Tallberg Th. 2005. Evolution this "Creative Idea" Accomplished by Mitochondria. Trends in Biomedicine in Finland XXI. In press).

Radiation used to preserve food may also be biologically deleterious since it kills the mitochondria in our "living" food items – the grass-root diet on which we thrive? As mitochondria are involved in digestive and decay processes, they are also participating in programmed cell death, ending in senescence.

Theoretically organ-specific regulatory mitochondria could also be used in *"active genomics"* to distinctively transform dormant "autogenous stem cells" forming new specialized organ cells the patients may need, as seen with foetal skin transplants used to heal skin burns in children (Hohlfeld. et al. 2005). Organ "skin-specific" mitochondria present in the foetal skin may specifically have activated stem cell maturation in the recipient, from her cells at the bottom of the wound. Stem cells activated by different organ specific mitochondria from the recipients tissue cells may, since the new cells have the recipients´ genetic pattern, avoid rejection. Such cells could thus possibly also be utilized in other therapeutic medical missions.

The billions of nucleotide chemical letters between genes are obviously not "junk-sequences", but naturally involved in pin-pointing species specific genes during embryogenesis (Tallberg 2001). *Proteomics* will then shape hundred-thousand physiologic proteins, conformed into active quaternary molecules.

Table 9. (see next page)

Metal analysis of mitochondrial metal enzymes by ICP-MS.

Lipidomics, the billions of CNS-lipids involved in inductional cell control

The importance of the "lipidome" is usually overlooked, see Table 10. To biologically revert malignant gene transcription back into normal cell transcription seems to involve, "lipidomics" i.e. the billions of lipids present in the mammalian central nervous system (CNS). Inductional, CNS-lipids are partaking in – "genomics" and "proteomics" to secure continuous mammalian health.

Table 10. (see next page)

The zillions of "functional lipids" in our central nervous system (CNS) are linked to gestational embryonic induction and are transferring regulatory inductional impulses related to cancer control. Ingested CNS-lipids stimulate lymphopoiesis and immunity, can alleviate diverse neurogenic ailments like stress syndromes and anxiety, as well as 8

Table 9.

Inductively coupled plasma mass spectrometry on electron dense mitochondria which re-transform leukaemic cells back into normal transcription.

A) Metal increase observed in mitochondrial christae and matrix

ICPMS analysis	Cr mcg/l	Fe mcg/l	Zn mcg/l	Ti mcg/l	Rb mcg/l	K mg
Transformed electron-dense mitochondria	0.062	12.4	0.126	0.088	0.018	0.010
Normal rat spleen mitochondria	0.005	5.5	0.018	0.039	0.010	0.005
Background	<0.005	0.032	0.015	<0.01	<0.003	<0.003

B) Metal content decreased in mitochondrial christae and matrix

ICPMS analysis	Sr mcg/l	Al mcg/l	Mo mcg/l	Ba mcg/l
Transformed electron-dense mitochondria	<0.005	0.043	0.006	0.002
Normal rat spleen mitochondria	0.056	0.085	0.008	0.004
Background	<0.005	0.032	0.066	<0.001

pain – representing the warning signal that the patients CNS can not cope with demands for new lipid production required for its crucial inductional signal-system. This neurogenic stress - "Tallberg syndromes" - can be curtailed by dietary CNS lipids (Tallberg 2003). Following such a diet, the patients´ nervous tissue seems to be able to attract from his serum the endogenously missing, or deficiently produced CNS lipids, whereby these neurogenic distress symptoms are curtailed. Inductional - lipidomic control is functioning also in the adult body, but less conspicuously. Blood-brain barrier lesions were spotted in cancer patients, evidenced as CNS-lipids transiently appearing in the serum of cancer patients, often following herpes virus infections (Tallberg et al 1979). The resulting CNS-lipid loss can then possibly limit the axonal cell-control in the specific segmental area it enervates. As a sequel, it seemed to result in malignant cell transformation in that enervated organ. The CNS diet recommended may compensate this loss, registered as alleviated neurogenic distress symptoms.

Conclusion

Immunobiology as here conceived, outlines a vital paradigm shift over prevailing cancer therapies; "to kill the last cancer cell" as it tries to apply a true "medical principle" by restoring the internal milieu of the diseased body specifically for our three main cancer forms (fig. 1). In bio-immunotherapy it has been possible to improve the treatment, prolong the disease free interval, prevent recurrent disease, compensate genetic weaknesses without un-physiologic invasive intervention, and it may ultimately lead to cancer prophylactic measures.

Every living cell seems to symbolize a supercomputer - where chromosomal DNA forms the memory unit - while organ-specific mitochondria act as major operators, translating the genetic programs they have shaped. If your PC gives a wrong response the fault is usually not in the memory, but rather to be found in the program or operator. With further studies the possibilities to pin-point and correct the inductional, metabolic and hormonal deficiencies leading to cancer will certainly improve, although our understanding of mammalian biology is imperfect, and may never be fully understood. If phylogeny over aeons, as it now in retrospect seems to be, is based on mitochondrial function and toil to create the chromosomes, forming the genome it regulates, it is highly unlikely that this utterly complex, functional and beautiful creation could have been generated merely by coincidence, devoid of a spiritual universal idea.

As I regard biology today, it seems to adhere to complex multi-factorial active components in nonlinear equations endowed by time-linked molecular interference - with oscillating wavelength or frequencies - emanating from pulsating fractals - shaping the "harmonious chaos" we call health. This biological system has fortunately a tendency to undergo spontaneous self-organisation, although rarely in cancer patients without outside active support. These complex holistic systems are naturally adoptive and consequently the healing cycles can be strengthened by introducing physiologically balanced, essential biological factors as presented in this review. In successfully employed bio-immunotherapy, cancer cells can resume and sustain normal cell transcription. In order to improve cancer therapies by bio-modulation, we must try to learn more about the use of organ-specific mitochondria in cell regulation, oncogene reparation, and also how they possibly affect stem cell maturation, to preserve a "steady state" healthy gene transcription.

Cancer seems to be regulated by organ specific mitochondria in cycles, via bio-modulating inductive lipidomics, in concert with genomics and proteomics. Further studies on these lines may hopefully lead to the future medical use of organ specific mitochondria as genuine biotechnological, "cancer precision remedies".

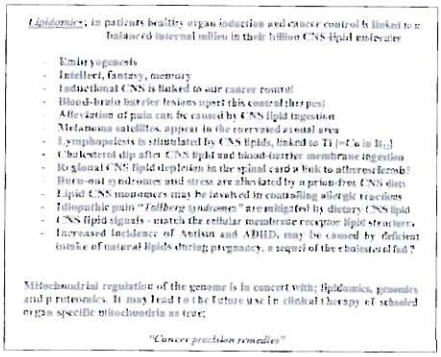
Epilogue

Human adrenal zona-reticularis (ZR) cells should be harvested (from forensic healthy material) to try to extract and characterize the curative neuroendocrine factors for CaP, produced by ZR. They may represent chemical corticoid-like substances. This could lead to a biological substitution therapy for prostate cancer, as insulin acts for diabetics.

The main future objective is to abandon the prevailing paradigm to; "kill the last tumour cell" and instead concentrate on genuine medial cures focused on improving non-toxic biological and immunological cancer treatment modalities, specifically aimed to actively prevent recurrent disease in patients suffering from malignant melanoma, renal cell adenocarcinoma or prostate and breast cancer and compensate genetic weaknesses. If the cost of such therapies, utilizing ready made powders, amounts to approx. two euros a day we can not afford not to try them. The ultimate goal for biotechnology in health care is to learn to use organ specific mitochondria aimed at stem cell maturation, to mimic, apply, and support natural feed-back cycles.

If creation of Homo sapiens is based on "intelligent design", the semantics is questionable (with 9/11, Madrid, London and Iraq in mind). Fortunately, continuous evolution seems primarily to be based on a "Creative Idea" accomplished by mitochondria shaping, over eons, the nucleotide sequences in chromosomes of all living matter. Evolution can not simply be based on random mutations, since that would exclude the observed nucleotide sequence analogies between species. Despite these new findings, Darwinism represents still the important, but secondary selection system.

Table 10.



Acknowledgements

I would like to thank all my co-workers listed in the references for their valuable contribution in developing this non-toxic treatment modality. The Institute for Bio-Immunotherapy is ready to teach colleagues, co-operate and support any prospective randomized study aimed to improve protocols for biological dietary supplementation. In suitable cases it should also be combined with the use of autologous cancer vaccines.

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[The composition of the powders, as listed in Tables 4, 5, 6, & 8 are the intellectual property of the Institute for Bio-Immunotherapy].

Figure 2 (reprinted from ref. 13)

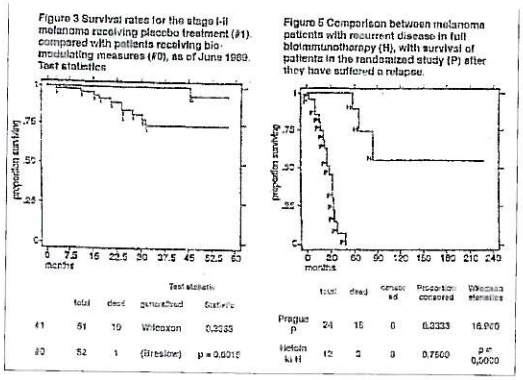


Figure 3. (reprinted from ref. 8)

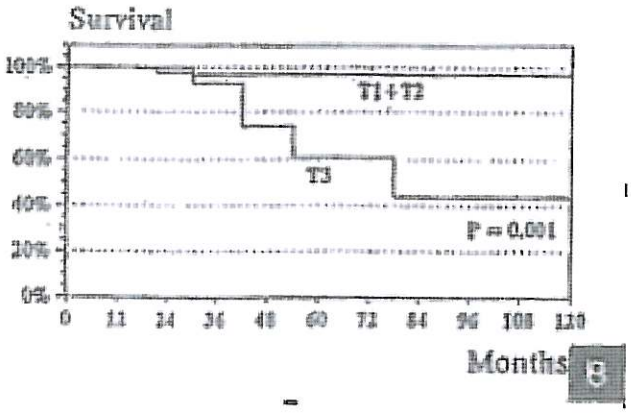


Figure 4.

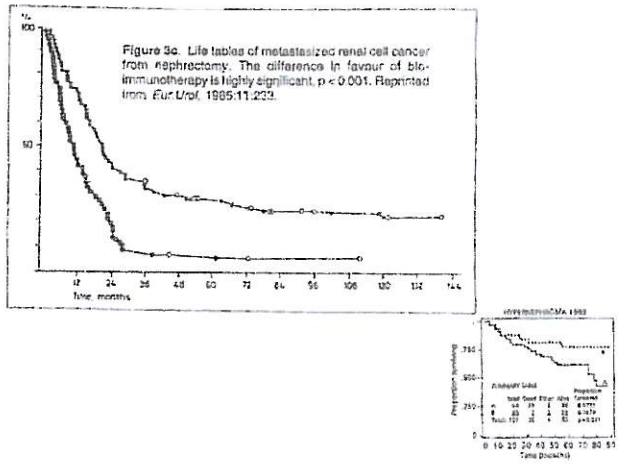


Figure 5.

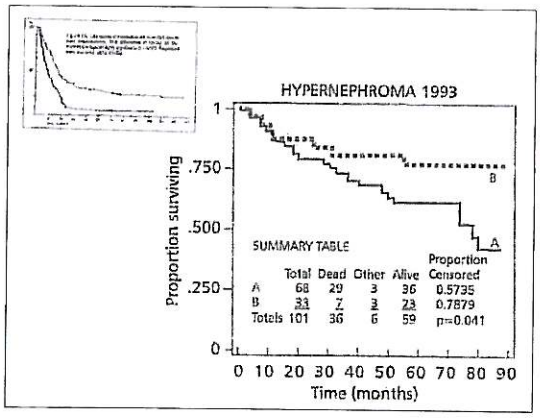
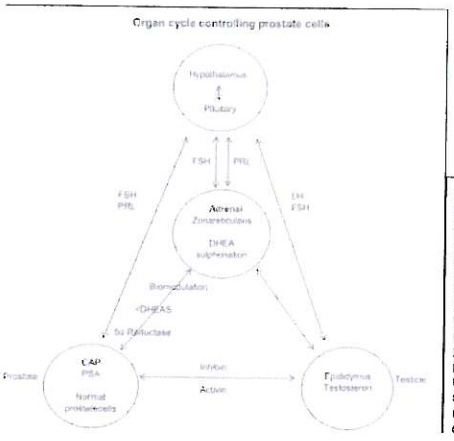


Figure 6.



Initially increased FSH or PRL are good prognostic signs and should always be analysed when CaP is found by screening tests since invasive treatments can be avoided. The human adrenal biological factors harboured in the zona reticularis should be assayed for their stimulatory effect on the pituitary as they could form a biological compensatory, dietary medical treatment for CaP. The effect of hormone therapy for CaP, in recommended intermittent short time pulses combined with metabolic bio-modulation causes a feed-back reaction recorded as characteristic changes in the laboratory response profile, with FSH, LH and/or PRL increase trailed by DHEAS decrease. In this reaction adrenal zona reticularis cells seem to have a central regulatory position. Orchiectomy will cause FSH to increase, further accentuated by prostatectomy. Prostate cancer patients die in a short time if orchiectomy is followed by adrenalectomy. A dramatic rise in activin levels is recorded in a special form of CaP. These cases were diagnosed based on soft tissue metastases. Inhibin is on the contrary remarkably decreased following orchiectomy.

References supplied on request and available on <www.acnem.org>.

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