

LMU KLINIKUM UNIVERSITÄT MÜNCHEN

MYTHS AND REALITIES OF POPULAR ANTI-CANCER DIETS

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RIDER ET AL. EUR UROL. MAR 28 2016

EJACULATION FREQUENCY AND RISK OF PROSTATE CANCER: UPDATED RESULTS WITH AN ADDITIONAL DECADE OF FOLLOW-UP

- N= 31 925 (*Harvard Health professionals Follow up Study*)
- 4.6-7 ejaculations per week = ↓ >30% Risk reduction

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4.6-7 ejaculations per week = ↓ >30% Risk reduction

Simple Intervention, no negative side effects.....

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4.6-7 ejaculations per week = ↓ >30% Risk reduction

4-7 time a week? Then I will do it 10 times to be certain it works

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He wants to do what? I want to help him but.....

4-7 times a week? How can I do that?

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DR. MAX GERSON (A GERMAN MECHANIC 1881-1959)

- **Mind. 10 kg Fruit and Vegetables Daily (freshly pressed smoothie)**
- Strict , fat- und low salt potassium rich vegetarian Diet
- **Recommend combining with Coffee Enemas**
- Supplements: Calves' liver juice, **more potassium**, Niacin, Iodine, Vitamin B12, Pancreas enzymes & thyroid hormones
- **Recommends to stay away from conventional medicine!**

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**JESSICA AINSCOUGH: "WELLNESS WARRIOR"
EPITHELIOID SARCOMA
(JULY 1985- 26 FEBRUARY 2015)**

Her mother, who was diagnosed with breast cancer and followed Gerson therapy, died in 2013

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"The therapy involves drinking **13 fresh organic veggie juices** per day (yes that's **one an hour, every hour of my waking day**), **five coffee enemas per day**, (believed to stimulate the **toxin-removal of the bile ducts, liver, and bowel**) and a basic organic whole food plant-based diet with additional supplements:

For two years I devoted my entire life to healing, to the extent that I was effectively housebound."

Jessica Ainscough excerpt from Blog seen online in 2012

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DR. MAX GERSON (A GERMAN MECHANIC 1881-1959)

Postulated Mechanism of Action

- Cancer arises from a misbalance of Potassium and Sodium
- Not targeted at any one specific symptom or disease
- Treats the underlying cause of the disease by supplying nutrients that are thought to be "easily absorbed" and utilized by the body it is thought that this provides the "optimum conditions for healing" and getting rid of toxins

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- one long-term survival is described in a patient with melanoma
- one death
- Conclusion: *some support, both physical and psychological*, appeared to be offered by this regime.
- 4/6 Patients concurrently undergoing conventional treatment

2010 Review (National Cancer Institute)

- Theoretical rationale does not stand up to scrutiny
- No evidence of usefulness for the Gerson diet

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COSTS

- The treatment centers (2-3 Weeks)
 - Mexico: \$5,500 per week
 - Hungary: € 5,500 Euro per week
- Patients encouraged to continue the therapy for approximately 2 years at home. This involves ongoing expense
 - (incl. telephone consultations, juicing equipment, large quantities of organic vegetables and supplements)

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RISKS

- Electrolyte imbalances (e.g ↑K+)
- Documented deaths (sepsis)
 - Serious illnesses, colitis, electrolyte imbalance and even death have been associated with the use of coffee enemas
- Malnutrition and /or Undernutrition
- 1989: Calves' liver juice discontinued from therapy guidelines it was associated with infection and the death of 9 cancer patients in 1981
- Avoidance of Conventional Medicine

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SELECTED POPULAR DIETS

- Gerson's regime
- Low carb diet /Ketogenic Diet
- Breuß' cancer cure
- Budwig's diet
- Laetrile / Vitamin B17 treatment
- Fasting
- Alkaline diet
- Vegan diet
- Raw Foods

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KETOGENIC DIET

- ✓ Very low Carbohydrate Intake
(2%-15% TEE)
- ✓ High in Fat
(60%-90% TEE)
- ✓ Many different versions exist
 - ✓ Classic ketogenic Diet, the middle Chain Triglyceride-Diet, the modified Atkins-Diet and the Low-Glycemic Index-Therapy(LGIT), Coy,
 - ✓ Lesser known Variations: Mediterranean Ketogenic Diet, and Paleo Ketogenic Diet
- ✓ **Goal:** imitate the metabolic effects of fasting while still on an iso-caloric diet

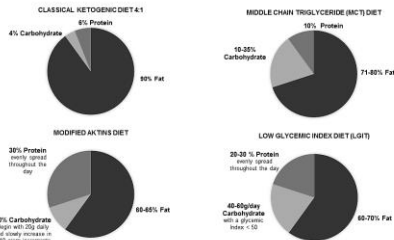
Erickson & Boscheri, AEM 2017
Gesellschaft für Neuropädiatrie S1-Leitlinie 022/021: Ketogene Diäten; 2014

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**4 MAJOR KETOGENIC DIETS
(STUDIED UTILIZING CONSISTENT PROTOCOLS)**

Figure 2: Macronutrient Breakdown of the four major variations of ketogenic diet presented as percentage of total individual estimated energy requirements
Modified after 5, 8, 10, 34-36



Erickson et al. Med Oncol (2017) 34:72

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IMPLEMENTATION

- **Ketogenic Diets** (International Consensus Statement on clinical implementation of the ketogenic diet)
- Carried out in Team: Physician, Dietitian (specially trained), Family
- Necessary to select high-fat foods as well as additional sources of fat at every meal in order to achieve the recommended fat content.
- All forms of the KD are considered nutritionally inadequate.
 - international KD consensus statement and the S1 guidelines require a carbohydrate-free multivitamin with trace minerals (including selenium) & Calcium
 - Vitamin D is strongly recommended

Kossoff EH. Epilepsia. 2008; 49(Suppl 8):11-3.

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Ketogenic Diet

Established Indications:

- ✓ **First line Therapy for :**
 - ✓ **Glucose transporter type 1 (Glut1) deficiency syndrome**
rare genetic metabolic disorder characterized by deficiency of a protein that is required for glucose (a simple sugar) to cross the blood-brain barrier
 - ✓ **Pyruvate dehydrogenase complex deficiency (PDCD)**
(formerly known as PDH deficiency) is an inherited inborn error of metabolism
- ✓ **Second line therapy for:**
children and young people with epilepsy whose seizures have not responded to appropriate oral anti-epileptic drugs AEDs

Gesellschaft für Neuropädiatrie S1-Leitlinie 022/021: Ketogene Diäten; 2014

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Ketogenic Diet for Cancer: Clinical Data

- **Clinical Data studying iso-caloric KD-Programs among cancer patients is limited**
- **Systematic Review (2017)** (Methods: Cochrane Effective Practice and Organization of Care (EPOC))
 - 15 clinical studies and case reports mined from our search
 - 5 case reports
 - 8 prospective studies
 - (6 single-arm studies, 1 single-arm crossover study, & 1 three-arm study utilizing TPN)
 - 2 retrospective studies

Erickson et al, Med Oncol. Med Oncol 2017; 34:72

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METHODOLOGICAL LIMITATIONS

- **Small numbers of participants**
 - N= 330
 - **11 out of 15 studies less than 15 Participants**
(5 had N= ≤ 5; 6 had N= ≤15)
- **177 (53%) followed a ketogenic diet at any point** during the studies
 - 67/177 (**37%**) of the patients following the KD—or 20% of all patients included in the studies—**managed to adhere** to the dietary recommendations for the duration of the study
- **Largest Studies**
 - N = 53: **N= 6 followed a ketogenic regime**
(Champ et al Neurooncol. 2014;117(1):125-31.)
 - N = 78: **N= 7 followed a ketogenic regime**
(Jasen & Walach; Oncol Lett. 2016;11(1):584-92, doi) Erickson et al, Med Oncol. Med Oncol 2017; 34:72

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Ketogenic Diet for Cancer: Clinical Data

- **Variations in duration, administration, & type of KD**
 - Duration and type of intervention range: single 3-h regime of glucose-based or lipid-based total parenteral solution to oral diets with ranging from 4 days to 5 years long oral dietary intervention (a single case)
 - 6 of the 15 studies looked at dietary interventions ≥ 3 months
- **Lack in homogeneity of type, location and cancer stage**
 - Results cannot be compared
- **No consistent standardized dietary and monitoring protocols**
 - No two studies utilized same protocol
 - Some studies used PN which cannot be compared to oral diets
 - Oral diets administered without dietitian
 - Some monitored ketones in blood samples while others measured ketones in the urine—or compared both

Erickson et al, Med Oncol. Med Oncol 2017; 34:72

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METHODOLOGICAL LIMITATIONS

- **Majority of studies looked at feasibility, dietary adherence and Effect on QOL**
- **None were able to demonstrate an effect on survival and/or tumor growth**
 - Rieger et al. reported antitumor observations, non-statistical significance could be derived (Int J Oncol. 2014;44(6):1843)
 - Tan & Shalaby observed no correlations between clinical response and ketosis or glycaemia (Nutr Metab (Lond). 2016;13:5)
 - In Rossi et al.'s three-arm trial, 9 of the 27 patients received the KD delivered through TPN. For all 27 patients, including the nine receiving the KD, there was no significant difference in tumor growth between the three arms
(Clin Nutr. 1991;10(4):228-3)

Erickson et al, Med Oncol. Med Oncol 2017; 34:72

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SIDE EFFECTS PROBLEMATIC FOR CANCER PATIENTS

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Table 3 Reported adverse effects of KD listed alphabetically

Modified after [5, 10, 20, 23, 25, 27, 28, 31, 33, 35, 40]
Anorexia
Amino acid levels: decreased
Acidosis (lactic acidosis)
Dehydration
Cardiac abnormalities (e.g. cardiomyopathy)
Functional changes (e.g. gastric parietal cells and thrombocytes)
Flu-like symptoms/tiredness
Gastrointestinal symptoms (including abdominal pain, constipation, diarrhea, reflux, vomiting)
Halitosis
Hypohydratemia
Hypoglycemia
Hypocalcemia
Hypoproteinemia
Hypo- and Hyperkalemia
Hypophosphatemia
Hypomagnesemia
Oxycarboxemia
Pancreatitis
Diarrhea
Pruritus
Renal calculi
Weight loss

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SIDE EFFECTS MOST PROBLEMATIC FOR CANCER PATIENTS

WEIGHT LOSS

- 73% lost Weight (7.5 ± 5.8 kgs)
(Tan-Shalaby et al. Nutr Metab (Lond). 2016;13:52)
- 4% observed weight loss (± 6.1 kgs)
(Fine et al. 2012 Nutrition. 2012;28(10):1028)

ESPEN LL:

- Weight loss = unfavourable prognosis, increased toxicity of anticancer treatments & reduced quality of life

Arends et al. Clin Nutr. 2017 Feb;36(1):11-48

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Why?

CAM decision-making

- ↑ Sense of control
 - ↑ Empowerment
 - ↓ Anxiety and fear
- **Conflict: resistance from clinicians, anxiety about making the "right" decision**

WEEKS, L. ET AL. OPEN MED. 2014; 8(2): E54–E66.

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WHY?

"I began looking at the different ways I may have contributed to the manifestation of my disease and then stopped doing them swapped a lifestyle of late nights, cocktails and Lean Cuisines for carrot juice, coffee enemas and meditation and became an **active participant in my treatment**" *Jessica Ainscough excerpt form Blog seen online in 2012*

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THE CHALLENGE

MEDICAL PRACTITIONERS

Fine Balancing Act

- "Keep your feet firmly planted in conventional medicine and the scientific method, and yet reach out to people with very different perspectives from your own remaining compassionate and open-minded."

Shattuck, JADA 97:12, 1997

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BE AWARE OF THE REALITY

- Liu Rhianon et al *J Alt. and Comp. Med.* 2016
 - (n=166) **Cross sectional Survey of Prior Use and Interest in Complementary and Integrative Health Approaches Among Hospitalized Oncology Patients**
 - Most commonly used approach was **vitamins/nutritional supplements (67%)**, followed by use of a **special diet (42%)**

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THE REALITY

- Paeke et. al (TUM) *The Breast* 2015
 - (n=286) Breast cancer
 - 50-70% use CAM (incl. Diet, Vit & Minerals)
 - 78% of CAM users **„complementary treatment as important- or more important than conventional medical therapy“**
- Dixon et. al. *Sem. in Oncol. Nurs.* 2012
 - 68% of oncology **physicians unaware of nutritional supplement and diet** use among their patients

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TAKE TIME

Table III. Ten steps as a guideline for discussing complementary and alternative medicine (CAM) with patients (9).

- 1 Elicit the person's understanding of their situation
- 2 **OFFER ALTERNATIVES!**
- 3 **Give Patients something concrete**
- 4
- 5
- 6 Discuss relevant concerns while respecting the person's beliefs
- 7 Provide balanced, evidence-based advice
- 8 Summarize discussions
- 9 Document the discussion
- 10 Monitor and follow-up Huebener et al. Anti. Cancer Research 34: 39-48 (2014)

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Offer Alternatives!!

- There are no "proven" Cancer diets
- Solid Evidence for healthy dietary pattern for **PREVENTION** (WCRF 2012)
 - Prevention of obesity, ↓ Meat (esp. processed meat) ↑vegetables, ↓Alcohol
- **During Therapy**= Solid evidence points to **Weight management** with priority on the **prevention of malnutrition** (NICE, ADA, Etc) and individualized medical nutrition care (minimizing side effects and maximizing outcomes)

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TEACH PATIENTS HOW TO RECOGNIZE QUACKERY

- **Characteristics:**
 - not in line with scientific results
 - Conform with lay etiology, myths, false hopes
 - based on invitro und invivo studies without replicable results in humans
 - **promise cures (even in case of advanced cancer)**
 - **Recommend avoidance of traditional medical care**
 - **Recommendations that promise a quick fix**
 - **Dire warnings of danger from a single product or regimen**
 - **Treats all forms of cancer**
 - **Lists of "good" and "bad" foods**

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NUTRITION IS INDIVIDUAL

Diets	Dietary interventions
Dictated by others	Controlled by individual choices, culture, and beliefs
Often involve strict plans and restrictions	No unnecessary restrictions
Excludes items	Includes personal wishes
Bad foods/Bad conscious	I can eat what I need

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THANK YOU FOR YOUR ATTENTION

QUESTIONS?

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