IMPLICATIONS OF THE VEGAN AGENDA

A WHITE PAPER

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INTRODUCTION

Currently there is a strong vegan/vegetarian agenda from mainstream media, celebrities and authorities. Schools around the globe introduce mandatory vegan days and educational material are updated with warning about the consumption of meat. Mainstream TV shows regarding public health selectively focuses on vegan stories in relation to health and longevity. Funding of pro vegan studies in the scientific community is higher than ever.

The purpose of this white paper is to review the scientific literature on the topic and to conclude possible implication of the persistent vegan push.

From omnivore to vegan: The dietary education of Bill Clinton

By David S. Martin, CNN

http://edition.cnn.com/2011/HEALTH/08/18/bill.clinton.diet.vegan/

INTRODUCTION TO SCIENTIFIC STUDIES

There are a number of ways to design studies and they all have strengths and shortcomings. Generally speaking observational studies where data are collected and correlations assessed are the weakest since they don't show causal relationships. They only show correlations and most correlations in such a study lack causal effect. For example, there is a correlation between ice cream consumption and drowning accidents but this doesn't mean ice cream causes drowning.

The general issue with observational studies is that the studied variables are confounded. For example, vegans smoke less, drink less, are more active and make health conscious choices compared to a control of omnivores if the control group is selected from an area with general poor health and life style.

Attempt to adjust for these differences are often made but in reality this is questionable. Who would test a new supplement for strength on one group of 20 year old and the other on 70 year old individuals and then try to adjust for the age difference?

A superior approach is to use subjects of equal age in such a case. This is called matched studies where the life style variables are matched between groups so they should be fairly similar.

One other major factor to consider is that any individual that takes on a new diet and experiences health complications will revert back to the old one. This means that new vegans that encounter health issues jump of and then brings their health implications to the statistics of the omnivore.

ADJUSTED STUDIES

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MORTALITY RATIOS FOR VARIOUS DIETARY GROUPS

A recent adjusted study (Appleby et al, 2016) including 60,310 individuals the authors concluded there were no difference in all cause mortality between different dietary groups of varying amount of meat.

However, they did merge the vegetarian and vegans to one group. In fact, if the groups were separated there were a higher mortality among the vegans (P = 0.056) which you will find in the report if you look closer on it (table 4).

STUDY FROM 2016 (HAZARD RATIOS)

REGULAR MEAT EATERS	**1.00**
LOW MEAT EATERS	**0.93**
FISH ONLY EATERS	**0.96**
VEGETARIANS	**1.00**
VEGANS	**1.14**
(P = 0.056)	

Appleby PN, Crowe FL, Bradbury KE, Travis RC, Key TJ. **Mortality in vegetarians and comparable nonvegetarians in the United Kingdom.** Am J Clin Nutr. 2016 Jan. https://www.ncbi.nlm.nih.gov/pubmed/26657045

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DIETARY HABITS AND MORTALITY

A large study (Mihrshahi et al, 2017) with 267 180 individuals showed that after adjustment for non dietary differences that there were to difference in mortality between vegetarians and meat eaters.

One intresting side note was that 26% of the vegetarians reported themself to be in ”Ecxellent health” versus only 15% of the meat eater claimed the same. Still the mortality was the same (mortality was higher among the vegiterians but it didnt reach statistical significans at 5% level).

Mihrshahi et al, “In conclusion, we have shown in a large population-based Australian cohort that there is no difference in mortality between vegetarians and non-vegetarians. The results of our study seem consistent with other studies and meta-analyses which have shown that in **non-selected populations** a vegetarian diet is not associated with reduced mortality”

Mihrshahi S, Ding D, Gale J, Allman-Farinelli M, Banks E, Bauman AE. **Vegetarian diet and all-cause mortality: Evidence from a large population-based Australian cohort - the 45 and Up Study**. Prev Med. 2017.
https://www.ncbi.nlm.nih.gov/pubmed/28040519

REPRODUCIBILITY AND DIET

Another imprtanc aspect of a diet is the sustainbility for the specis. A recent study (Orzylowska EM et al, 2016) looked at sperm quality and found it to be higher in omnivours compared to vegans.

Orzylowska EM et al, “The study showed that the vegetables-based food intake decreased sperm quality. In particular, a reduction in sperm quality in male factor patients would be clinically significant and would require review. Furthermore, inadequate sperm hyperactivation in vegans suggested compromised membrane calcium selective channels”

Orzylowska EM, Jacobson JD1, Bareh GM, Ko EY, Corselli JU, Chan PJ3**. Food intake diet and sperm characteristics in a blue zone: a Loma Linda Study**. MEur J Obstet Gynecol Reprod Biol. 2016 Aug;203:112-5

MATCHED STUDIES

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VEGETARIANISM AND NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD)

Choi et al did a study where they compared the prevalence of NAFLD among vegetarians (vegans with our definition) and a matched (Age, Sex, BMI, Metabolic syndrome, Alcohol, smoking) control of omnivores.

Remarkably 25% of the vegetarians were excluded from the study due to previous liver disease (mean age 48 years). The study didn't mentioned any liver disease among the omnivores. Of the vegetarians enrolled in the study 30% where found to have fatty liver (NAFLD) compared with 25% in the control (P=0.055).

Interestingly, on PubMed this study does not have one single citation, possibly indicating why vegan studies with negative outcome for vegans never reach the general public.

- **815 VEGETARIANS SELECTED**
- **200 (25%) EXCLUDED DUE TO PREVIOUS LIVER DISEASE**
- **615 REMAINING**
- **184 (30%) HAD FATTY LIVER**

Choi SH1, Oh DJ, Kwon KH, Lee JK, Koh MS, Lee JH, Kang HW. **A vegetarian diet does not protect against nonalcoholic fatty liver disease (NAFLD): A cross-sectional study between Buddhist priests and the general population**. Turk J Gastroenterol. 2015 Jul.

A 21 YEARS STUDY FROM GERMANY ON VEGANS AND OMNIVORES

A long term (21 years) German study (Chang-Claude J et al, 2005) on health conscious vegans and omnivores showed a statistical significant lower mortality in omnivores. The length of this study and that both groups had fairly similar life style pattern makes it one of the better studies based on collected data.

Pay attention to the authors didn't mention this in the abstract but you find the data in table 2.

	Vegans	Omnivores
All mortality (SMR)	62	52

Chang-Claude J, Hermann S, Eilber U, Steindorf K. **Lifestyle determinants and mortality in German vegetarians and health-conscious persons: results of a 21-year follow-up.** Cancer Epidemiol Biomarkers Prev. 2005 Apr.
http://www.ncbi.nlm.nih.gov/pubmed/15824171

MEAT INTAKE AND CAUSE-SPECIFIC MORTALITY

A large Asian study (Lee JE et al, 2013) consisting of 112,310 men and 184,411 women showed lower CVD mortality in men and lower cancer mortality in women for high meat eaters.

”Red meat intake was inversely associated with CVD mortality in men and with cancer mortality in women in Asian countries”

Lee JE, McLerran DF, Rolland B, Chen Y, Grant EJ, Vedanthan R, Inoue M, Tsugane S, Gao YT, Tsuji I, Kakizaki M, Ahsan H, Ahn YO, Pan WH, Ozasa K, Yoo KY, Sasazuki S, Yang G, Watanabe T, Sugawara Y, Parvez F, Kim DH, Chuang SY, Ohishi W, Park SK, Feng Z, Thornquist M, Boffetta P, Zheng W, Kang D, Potter J, Sinha R. **Meat intake and cause-specific mortality: a pooled analysis of Asian prospective cohort studies.** Am J Clin Nutr. 2013 Oct. http://www.ncbi.nlm.nih.gov/pubmed/23902788

THE ASSOCIATION BETWEEN EATING BEHAVIOUR AND VARIOUS HEALTH PARAMETERS

Another matched study (Burkert NT et al, 2014) looked at a long range of health parameters where the majority of them was better for the omnivores with a diet rich in meat compared to vegan. Among the included factors three of them (allergies, mental disorder and cancer) had statistically significant higher prevalence among the vegans compared to omnivores.

	Vegans	High meat eaters (P<0.05)
Allergies	31%	17%
Mental dissorders	9.4%	4.5%
Cancer	4.8%	1.8%

Burkert NT, Muckenhuber J, Großschädl F, Rásky E, Freidl W. **Nutrition and health - the association between eating behavior and various health parameters: a matched sample study**. PLoS One. 2014 Feb.
http://www.ncbi.nlm.nih.gov/pubmed/24516625

RANDOMISED CONTROLLED TRIALS

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ADDITION OR REDUCTION OF MEAT

In a RCT study (Petzke KJ et al, 2011) where they specifically wanted to address the influence of meat they let one group increase the meat intake (25% of energy) and the other group cut down on meat (14% of energy). All other dietary habits remained the same.

Concentrations of total cholesterol (−7%), LDL-cholesterol (−8%), and glucose (−4%) deceased significantly after the high meat intake compared to start while there were no difference in the low meat group.

In addition lean body mass increased (0.7kg) in the high meat group while it decreased (-0.8kg) in the low meat group.

- **HIGH MEAT (25% OF ENERGY)**
- **LOW MEAT (14% OF ENERGY)**

THE HIGH MEAT GROUP COMPARED TO START:

- **LEAN BODY MASS (+ 0.7KG)**
- **TOTAL CHOLESTEROL (-7%)**
- **LDL-CHOLESTEROL (- 8%)**
- **GLUCOSE (-4%)**

Petzke KJ et al. **Increased fat-free body mass and no adverse effects on blood lipid concentrations 4 weeks after additional meat consumption in comparison with an exclusion of meat in the diet of young healthy women**. J Nutr Metab. 2011 http://www.ncbi.nlm.nih.gov/pubmed/21773015

ATKINS VS ORNISH

A very interesting randomized control study (Gardner et al, 2007) was done over a period of 12 months. It did include the Atkins diet (high in meat and fat) and the Ornish diet (a low fat almost vegan diet focused).

At “www.ornish.com” they claim the diet to be “scientifically proven to reverse the progression of even severe coronary heart disease, type 2 diabetes, hypercholesterolemia, and high blood pressure”.

Still, no legal actions seems to be taken against the organisation behind Ornish. Despite the Atkins diet showed superior risk marker improvements over the Ornish diet you would not be able to get away with such a claim for a high protein and/or high fat diet (Tim Noakes trial)

Atkins, Zone, Ornish, and LEARN Diet after 12 months

- **HDL -> Winner Atkins**
- **Triglyceride -> Winner Atkins**
- **Blood Pressure -> Winner Atkins**
- **LDL -> No difference**
- **Glucose -> No difference**
- **Insulin -> No difference**

Gardner CD, Kiazand A, Alhassan S, Kim S, Stafford RS, Balise RR, Kraemer HC, King AC**. Comparison of the Atkins, Zone, Ornish, and LEARN Diets for Change in Weight and Related Risk Factors Among Overweight Premenopausal Women. The A TO Z Weight Loss Study:** A Randomized Trial. JAMA. 2007. http://www.ncbi.nlm.nih.gov/pubmed/17341711

THE PALEO DIET - THE KING OF ALL DIETS

The paleo diet has been benchmark towards a number of high end diets and it has won all of these benchmarks

- Mediterranean Diet (Lindeberg et al, 2007)
- Nordic Nutrition Recommendation (Mellberg C et al, 2014)
- Heart-healthy Diet (Pastore, et al, 2015)
- Diabetes Association Diet (Jönsson et al 2009, Masharani et al 2015, Fontes-Villalba et al 2016)

Lindeberg et al. A Palaeolithic diet improves glucose tolerance more than a Mediterranean-like diet in individuals with ischaemic heart disease. Diabetologia. 2007 Sep.

Jönsson et al. Beneficial effects of a Paleolithic diet on cardiovascular risk factors in type 2 diabetes: a randomized cross-over pilot study. Cardiovasc Diabetol. 2009 Jul.

Mellberg et al. Long-term effects of a Palaeolithic-type diet in obese postmenopausal women: a 2-year randomized trial. Eur J Clin Nutr. 2014.

Pastore et al. Paleolithic nutrition improves plasma lipid concentrations of hypercholesterolemic adults to a greater extent than traditional heart-healthy dietary recommendations. Nutr Res. 2015 May.

Masharani et al. Metabolic and physiologic effects from consuming a hunter-gatherer (Paleolithic)-type diet in type 2 diabetes. Eur J Clin Nutr. 2015 Apr 1.

Fontes-Villalba et al. Palaeolithic diet decreases fasting plasma leptin concentrations more than a diabetes diet in patients with type 2 diabetes: a randomised cross-over trial. Cardiovasc Diabetol. 2016 May

MEATS GENETIC IMPACT

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RELATIONSHIP BETWEEN TELOMERE LENGTH AND DIET

Telomeres cover chromosome ends and dictate cells lifespan. This study looked at relationship between telomere length and life style factors.

Of 9 food types (cereal, fruits, vegetables, diary, red meat, poultry, fish, sweets and salty snacks) and 8 beverages (juices, coffee, tea, mineral water, alcoholic- and sweetened carbonated beverages) as only red meat was related enhanced telomere length. The greatest difference where between strict vegans (never eat meat) and high meat consumers (1–2 daily, $p = 0.02$).

A unique strenght with this study is that there were no confunding of red meat (beef) consumption and other factors which pinpoints the unique effect of read meat.

RED MEAT CONSUMPTION HAD A GREATER POSITIVE INFLUENCE ON TELOMERE LENGTH THAN SMOKING HAD NEGATIVE IMPACT.

Kasielski M et al,. **The relationship between peripheral blood mononuclear cells telomere length and diet - unexpected effect of red meat**. Nutr J. 2016 Jul

SUMMARY

1. ADJUSTED OBSERVATIONAL STUDIES: WINNER – A HEALTHY MEAT BASED DIET
2. MATCHED OBSERVATIONAL STUDIES: WINNER – A HEALTHY MEAT BASED DIET
3. RANDOMIZED CONTROLLED TRIALS: WINNER – A HEALTHY MEAT BASED DIET
4. DIET AND GENETIC IMPACT: WINNER – A HEALTHY MEAT BASED DIET

CONCLUSIONS – IMPACT OF THE VEGAN DIET

1. DECREASE HEALTH SPAN AND LIFE SPAN
2. NEGATIVE INFLUENCE OF PHYSICAL PERFORMANCE
3. NEGATIVE IMPACT ON MENTAL AND COGNITIVE CAPACITY
4. LOWER FERTILITY

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