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Review Article

Pros and Cons of Raw Vegan Diet

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Abstract

Diet has a major influence on both, human health and their behavior. Raw veganism is a diet that brings together two concepts: the one of veganism and the one of raw foodism, a diet that excludes all ASF (Animal Source Foods), all food cooked at a temperature above 48 °C (118 °F), and any food that is changed from its ordinary condition, and/or processed. The aim of the study was to bring more information about raw vegan diet and the controversy raw vegan versus cooked food. Scientific data taken into account recommend the use of the raw vegan diet mostly for a short period.


Key words: veganism, foodism, health benefit, diet trend.

Introduction

The diet plays one of the most important roles in ensuring human health [1]. Nowadays there are many different dietary models, but some of them are not widely accepted or adopted. Among these, we can bring up: gluten-free, low calorie or raw vegan diets [2]. The first mentioned vegetarian diets have been known since antiquity, Pythagoras being one of the earliest supporters of this eating habit. The today's known vegetarian diet from which they were excluded milk and milk products or eggs appeared at the beginning of the 19th century. The vegetarian term has been replaced with the vegan term later in 1944, in Scotland, but veganism has been adopted by other countries as well. However, until the early 2000s the population who embraced this food

habit was insignificant [3]. The first followers of raw vegan nutrition supported this diet without relying on scientific data. They explained the benefits of consumption of raw vegetable by considering three factors: the effect of heat treatment on food, the role of natural food and the effects of consumption of foods containing gluten. Regarding the first factor, there has been this conception that heating degraded most of vitamins, especially vitamin C and carotenes, besides, the proteins and some of other carotenoids become more accessible [4, 5]. Also some literature study has revealed that proteins can generate during the heating, some mutagenic compounds that could have harmful effects on human health [4]. In respect to natural food, the benefits of their consumption are supported by the concept that, everything that is natural is good, and everything that is non-natural is bad, however, this does not always have a scientific support [6,7]. Raw food diets is represented mainly and sometimes exclusively of crude vegetables, fruits and less of products of animal

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origin. In the same category are included food whose processing involves the application of mild heat treatment, as: fruits, vegetables, meat or fish dehydration, cold-pressing of oils and honey. Other foods that are included in raw vegan assortments are: cold-smoked meat and fish and pickled or fermented vegetables, respectively [8,9]. Same exclusions as veganism as well as the exclusion of all foods cooked at temperatures greater than 118°F [10,11]. Raw vegan diets have been widely mediated in the last years [12]. Even if more and more people are accessing the raw vegan diet, the opinions regarding its benefits for human health are contradictory. In addition, there are fewer studies regarding the potential effects of this eating habit on human health. In this paper is presented a review about the pros and cons of arguments related to raw vegan diet. In order to achieve a brief review regarding the pros and cons of arguments on raw vegan food and diet, we selected 41 scientific papers and online resources out of over 150 reference sources.

The most popular diets

Diet has a major influence on both human health and their behavior. There are many options in choosing a diet to meet consumer preferences and needs related to eating [13]. The most popular diets in the world include:

- Paleo diet, consisting in a natural way of eating from which sugar is almost totally

eliminated and processed foods, grains and dairy products are excluded;

- Blood Type Diet, consists in consuming foods that match the individual's blood type;
- Vegan Diet, represents a form of a vegetarian diet from which is excluded any animal products;
- South Beach Diet, appeared in early 2000 and consist of replacing the general daily dietary habits with a balanced diet to be set every day;
- Mediterranean Diet, consists in consumption of large quantities from a wide variety of vegetables, fish and a restricted assortment of meat;
- Raw Food Diet, which involves consumption of uncooked and unprocessed food [13].

The raw food diet is approached differently around the world and includes raw vegan eating. In Germany for example, cereals and dairy products are completely excluded and a meal consisting of a single food uncombined with other ingredients [14]. Raw food diets have many variants and can be classified similarly to vegetarian diet in: ovo-lacto-vegetarian, vegan, or omnivorous (inclusive raw meat and fish) [12].The main ingredients of the raw vegan diet includes fruits, nuts, seeds, and sprouted grains and beans [8].

Several definitions of raw vegan diet are recorded in the literature and some of them are mentioned in Table 1.

Table 1.

Definition of raw vegan diet

No.	Definition
1.	A diet based on the exclusive consumption of plant foods without prior cooking [15].
2.	A diet based on the consumption of fresh, dehydrated at low temperature (up to 104 degrees Fahrenheit/40°C), cold-smoked products or fermented vegetal foods [15].
3.	Raw vegan diet consists of foods prepared without heating, and whose recipe does not include animal products, dairy or eggs [4].
4.	A diet, which excludes all food and products of animal origin, or food, cooked at a temperature above 48°C (118°F), as well as, any food that is changed from its natural condition, and/or processed [7].

Is the raw food diet good or bad?

The adherence to a certain diet is influenced by different factors as self-efficacy, control of own health, the impairment of the body by disease, social protection, the desire to change, previous habits and not least the socio demographic factors [4]. Raw veganism followers consider that cooking

means killing and they preach about "live" foods versus "dead" foods [15]. During cooking some nutrients from food are degraded, important enzymes are denatured, and some mutagenic and pro-inflammatory compounds could be generated [16]. A brief overview of the pros of raw vegan diet is shown in Table 2.

Table 2.

Pros raw vegan diet

No.	Aspects	Arguments
1.	Effects on human body	Eating raw vegan foods determine weight loss, more energy, clean skin, better digestion and a easier accommodation at climatic conditions including its changes [17].
2.	Nutritional intake	Raw vegan diet includes a complex of ingredients, which are rich in nutrients and insoluble fiber. Raw vegan foods contains water-soluble vitamins (B, C), minerals (K, Fe, Mg), antioxidants such as carotenoids (lycopene and beta-carotene), vital enzymes, phytic acid, vegetable proteins such as lectins are low in calories [4,5,14,18].
3.	Plant enzymes activity in human body	Against the theory that most of the plant's enzymes are destroyed by digestion n, some of the plant enzymes (ex bromelain - pinaapple) survive digestion and shows measurable activity in the circulating blood [19].
4.	Presence of chemicals in raw fruits and vegetables (pesticides, fungicides, insecticides, fertilizers)	Fruits and vegetables from conventional agriculture are treated with chemicals but do not have a negative impact on human health if are eaten raw [4]. Eating raw vegan food has more health benefits than potential negative effects of chemicals on human body [11,20]. There are no relevant differences in nutrient content of ecological and conventional plants, but organic foods are richer in minerals and vitamin C and have a lower content of nitrates [2,3,8,21]. The consume of organic raw plants represents a possibility to avoid pesticides [1,22,23,24].
5.	Effects on human health	Eating raw vegan is mainly associated with increasing longevity [25], reducing the incidence of cancer and cardiovascular disease [26] and positive results on chronic disease [4]. Other studies have reported improvement of fibromyalgia and rheumatoid arthritis symptoms [6]; slight decrease of white blood cells counts; low levels of C-reactive protein [4]; Improving the overall quality of life regarding mental anxiety and stress [4]; low concentration of LDL cholesterol, low levels of triglyceride [14], blood sugar, blood pressure [13]; reduced risk of obesity and developing diabetes type 2 [27]. There is little information about the influence of the raw vegan diet on the immune system [4,28].

A summary of the opinions regarding the vegan raw diet is presented in Table 3.

Table 3.

Cons raw vegan diet

No.	Aspects	Arguments
1.	Presence of chemicals and pathogenic microorganisms in raw fruits and vegetables	Fruits and vegetables from traditional farms are sprayed many times with high-levels of chemicals which could be eliminated at least partially during cooking [19,20,21]. Plants contaminated with microorganisms (molds belonging to <i>Penicillium</i> , <i>Phytophthora</i> , <i>Alternaria</i> , <i>Botrytis</i> , <i>Aspergillus</i> and/or bacterial species from <i>Pseudomonas</i> , <i>Erwinia</i> , <i>Bacillus</i> , and <i>Clostridium</i>) could cause illness, with the exception of <i>Bacillus</i> and <i>Clostridium</i> which can be destroyed by heating [13,29].
2.	Effects on human body	Weight loss could have negative effects on very active people, which will need to make great efforts to procure the calories they need [7,32]. Also, there are studies that have reported decrease in bone mass [7,31,33].
3.	Effects on human health	Installation of amenorrhea in women, especially elderly, who practice the raw vegan diet [9,34] A low LDL:HDL cholesterol ratio and a low level of LDL concentration [28,35]; lack of vitamin B12 together with a low LDL concentration could result in rising of plasma tHcy concentration which could be responsible for increasing the risk of cardiovascular disease and stroke [10,14,36]. Insufficient protein intake may determine decreasing of plasma concentrations of various essential amino acids, anorexigenic and metabolic hormones, reducing of energy, digestibility and decreasing of lean mass [30,37]. Lack of vitamin D may increase the risk of fractures and osteoporosis [7,38]
4.	Nutritional intake	Insufficient intake of some nutrients such as protein, vitamin B12, iron, calcium, selenium, zinc, two omega-3 fatty acids (EPA-eicosapentaenoic acid and DHA-docosahexaenoic acid) and vitamin D [26,14,33,39].
5.	Cooking increases bioavailability of nutrients	Cooking helps the release of some nutrients by breaking apart fibers and cellular walls and there are cooking methods which improve nutritional and physicochemical qualities of food [11,40,41].

Conclusions

Raw vegan diet has become more and more popular in the last years. Most people who have adhered to this diet take into account the health considerations. Scientific data taken into account in conducting this study show that raw vegan diet have both positive and negative effects on human body especially in terms of nutritional intake and health. In addition, scientific papers and online resources emphasize that acceptance of raw vegan diet for a short time could be beneficial for human body. Most scientists agree that a blend of diets based on raw and cooked food, eating meat, fruits and vegetables enabled the progress of the human brain.

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