JANISZEWSKA, Michalina, IMBIRSKA, Beata, PRAGER-ZIMNY, Marta, CYRULIK, Michalina, RAMLAU, Natalia, KOLENDA, Dominika, FISCHER, Zuzanna, PODOLAK, Marcin, HŁADKI, Michał and SIMACHI, Michalina. The role of plant-based diet in prostate cancer – a review of literature. Journal of Education, Health and Sport. 2025;86:67417. eISSN 2391-8306.
https://doi.org/10.12775/JEHS.2025.86.67417
https://apcz.umk.pl/JEHS/article/view/67417

The journal has had 40 points in Minister of Science and Higher Education of Poland parametric evaluation. Annex to the announcement of the Minister of Education and Science of 05.01.2024 No. 32318. Has a Journal's Unique Identifier: 201159. Scientific disciplines assigned: Physical culture sciences (Field of medical and health sciences); Health Sciences (Field of medical and health sciences).
Punkty Ministerialne 40 punktów. Załącznik do komunikatu Ministra Nauki i Szkolnictwa Wyższego z dnia 05.01.2024 Lp. 32318. Posiada Unikatowy Identyfikator Czasopisma: 201159. Przypisane dyscypliny naukowe: Nauki o kulturze fizycznej (Dziedzina nauk medycznych i nauk o zdrowiu); Nauki o zdrowiu (Dziedzina nauk medycznych i nauk o zdrowiu). **© The Authors 2025;**
This article is published with open access at Licensee Open Journal Systems of Nicolaus Copernicus University in Torun, Poland
Open Access. This article is distributed under the terms of the Creative Commons Attribution Noncommercial License which permits any noncommercial use, distribution, and reproduction in any medium, provided the original author (s) and source are credited. This is an open access article licensed under the terms of the Creative Commons Attribution Non commercial license Share alike.
(http://creativecommons.org/licenses/by-nc-sa/4.0/) which permits unrestricted, non commercial use, distribution and reproduction in any medium, provided the work is properly cited.
The authors declare that there is no conflict of interests regarding the publication of this paper.
Received: 12.12.2025. Revised: 28.12.2025. Accepted: 28.12.2025. Published: 31.12.2025.

The role of plant-based diet in prostate cancer – a review of literature

Michalina Janiszewska
University Hospital in Poznań
Przybyszewskiego 49, 60-355 Poznań
https://orcid.org/0009-0001-1321-8565
janiszewska.michalina@gmail.com

Beata Imbirska
Regional Hospital in Poznań,
Juraszów 7/19, 60-479 Poznań
https://orcid.org/0009-0002-2941-3418
beata.imb@gmail.com

Marta Prager-Zimny
University Hospital in Poznań
Przybyszewskiego 49, 60-355 Poznań
https://orcid.org/0009-0000-6412-3745
marta.prager98@gmail.com

Michalina Cyrulik
University Hospital in Poznań
Przybyszewskiego 49, 60-355 Poznań
https://orcid.org/0009-0008-9174-801X
michalina.cyrulik@onet.pl

Natalia Ramlau
University Hospital in Poznań
Przybyszewskiego 49, 60-355 Poznań
https://orcid.org/0009-0006-3595-1529
naramlau@gmail.com

Dominika Kolenda
S.T. Dąbrowski Hospital in Puszczykowo
Józefa Ignacego Kraszewskiego 11, 62-040 Puszczykowo
https://orcid.org/0009-0007-9243-6723
dominika.kolenda98@gmail.com

Zuzanna Fischer
Hospital in Ostrów Wielkopolski
Limanowskiego 20-22, 63-400 Ostrów Wielkopolski
https://orcid.org/0009-0008-3530-5660
zuzannakrysciak@gmail.com

Marcin Podolak
Medical Center HCP
28 czerwca 1956 r. nr 194, 61-485 Poznań
https://orcid.org/0009-0000-2839-728X
marcin.podolak2@gmail.com

Michał Hładki
Medical Center HCP
28 czerwca 1956 r. nr 194, 61-485 Poznań
https://orcid.org/0009-0000-2420-2203
hladki.mt@gmail.com

Michalina Simachi
University Hospital in Poznań
Przybyszewskiego 49, 60-355 Poznań
https://orcid.org/0009-0002-9137-0535
skrzypem97@gmail.com

Abstract

Introduction:

Connection between plant-based diet and prostate cancer risk is an emerging topic in the scientific field. Diets high in animal products have been associated with increased prostate cancer incidence and mortality. Prostate cancer is among the most common cancers in men, and diet is considered a modifiable risk factor that may influence disease development and progression. Emerging evidence suggests that plant-based diets may reduce prostate cancer risk and improve patient outcomes.

Aim of the Study:

This review aims to explore the relationship between a plant-based diet and the risk of developing prostate cancer. It focuses on evaluating existing clinical evidence regarding the potential protective effects of plant-based nutritional patterns. We also aim to highlight how dietary choices may contribute to prostate cancer prevention and the importance of connections between nutrition and cancerogenesis.

Materials and Methods:

We conducted a comprehensive literature review by searching multiple databases, including PubMed, Web of Science and Google Scholar using key terms such as “plant-based diet”,

"prostatic neoplasms", "nutrition", "prostate-specific antigen", "lifestyle", "meat". Our analysis focused on clinical trials, preclinical studies, and peer-reviewed research relevant to the topic. The selected studies provided a broad overview of current scientific findings. This approach ensured a thorough and up-to-date evidence base for our review.

Conclusions:

Prostate cancer is one of the most common malignancies affecting men worldwide. Understanding and addressing modifiable risk factors is essential for prevention and improved outcomes. Lifestyle choices, including diet, play a significant role in influencing disease risk. Growing evidence suggests that a plant-based diet may be associated with a reduced risk of developing prostate cancer. It's important to research modifiable risk factors and to educate patients on their lifestyle choices.

Key words: plant-based diet; prostatic neoplasms; prostate-specific antigen; nutrition, lifestyle, meat

Introduction and Purpose

A plant-based diet is characterized by the reduction or complete exclusion of all types of animal-derived products, including meat, fish, dairy, eggs, and other animal-based ingredients. Instead, it emphasizes the consumption of a wide variety of plant-derived foods, such as vegetables, fruits, legumes, whole grains, nuts and seeds [1]. It has health, ethical and environmental benefits. Health benefits may come from the fact that a diet based on plant products contains more fiber and antioxidants, has lower contents of saturated fats and from reduced overweight and obesity rates in this population [2, 3]. A survey study by Bryant [4] conducted on a UK population found that people are aware that a more vegetable dense diet is a healthier and more ethical option but still were not prone to pursuing a vegan or vegetarian lifestyle. Lower greenhouse gas emissions, greater biodiversity and minimized freshwater use are some of the environmental benefits [5, 6]. Plant-based diet has become more popular in recent years in Western countries [7]. Exploring the potential association between consuming less meat and other animal products and major chronic diseases such as cancer is an expanding area of

scientific research. The highest incidence of prostate cancer is observed in highly developed countries and these countries are also known for a high consumption of meat products. Some ecological studies have linked a more animal protein rich diets with higher rates of prostate cancer in countries with greater consumption of meat and dairy [8, 9, 10]. They showed that prostate cancer mortality was most strongly associated with animal product consumption.

Prostate cancer is one of the most common types of cancer among men [11]. Its incidence rate increases with age reaching around 35% in men aged 65-74 [12]. Non-modifiable risk factors include age, ethnicity, family history and genetic factors, while poor diet, alcohol consumption, obesity, low physical activity and smoking are considered modifiable [13].

It's important to strive for a better understanding of how we can prevent or slow the progression of this disease. A healthy lifestyle is on the modifiable risk factors list in many diseases, including cancer. A growing body of evidence suggests that a diet containing more plant-based products may be beneficial for prostate cancer risk and outcomes in patients with prostate cancer. The aim of this paper is to present the current state of knowledge on the role of plant-based diet in risk of developing prostate cancer and in prostate cancer patients' outcomes.

A healthful and unhealthful plant-based diet index

When trying to measure the influence eating habits have on a disease it is necessary to quantify the data on food consumed by the sample population. In a 2023 cohort study on a UK population Thompson et al. [14] measured the impact of a healthful vs. unhealthful plant-based diet for mortality and major chronic diseases, including prostate cancer. To obtain this data they divided consumed products into three food groups (Table 1.) and then used a healthful plant-based diet index (hPDI) and an unhealthful plant-based diet index (uPDI) based on mean dietary intake data obtained from no fewer than two 24-hour food records to objectify its plant-based contents. Food products have been sorted into groups according to a study by Piernas et al. [15].

Healthful plant-based foods	Unhealthful plant-based foods	Animal-based foods
Whole grains	Fruit juices	Animal fat
Fruits	Refined grains	Diary
Vegetables	Potatoes	Eggs
Nuts	Sugar-sweetened beverages	Fish or seafood
Legumes and vegetarian protein alternatives	Sweets and desserts	Meat
Tea and coffee		Miscellaneous animal-derived foods

Table 1. Categorisation of food products used to obtain a healthful and an unhealthful plant-based diet index

This kind of data stratification was used to emphasize that a plant-based diet can be healthy or unhealthy. A healthful one was defined as containing less processed sugars, refined grains and had lower fat contents. This study showed that participants which adhered more to the hPDI had lower risk of developing cancer whereas participants who adhered to a diet with higher uPDI had higher risk.

Mouzannar et al. [16] also used PDI to examine diet's influence on prostate specific antigen (PSA) levels. They found that there was a significant association between consumption of healthier plant-based food (higher hPDI) and lower probability of having elevated PSA levels.

In a 2022 study Loeb et al. [17] divided examined population of men into age categories <65 and ≥65 years old. There was no significant connection found between a PDI and total prostate cancer or localized disease, but they discovered that hPDI was associated with significantly lower risk of localized prostate cancer in overall population. Surprisingly, a lower risk of lethal and fatal prostate cancer was associated with a higher overall and healthful PDI in men under 65 years old but higher unhealthful PDI in men aged 65 and older.

Impact of dietary habits on quality of life

The impact of plant-based diet on quality of life in prostate cancer survivors was studied by Loeb et al. in 2024 [18]. The aim of this study was to examine the connection between plant-based diet tendencies in post-diagnosis quality of life in a group of men with non-metastatic

prostate cancer. The quality-of-life questionnaires included areas of life such as: sexual health and functioning, urinary system functioning, urinary incontinence, bowel functioning and hormonal levels. Almost half of the studied population underwent a radical prostatectomy during primary treatment. The study found that higher percentage of plant-based foods in one's diet was associated with better scores in all the above quality of life domains. A study conducted by Liu et al. [19] measured postdiagnostic plant-based dietary patterns in men with prostate cancer. The results suggest that an improved quality of diet by incorporating nutrient-dense plant-based foods and reducing animal produce may be advantageous in reducing risk of prostate cancer progression and cancer-specific mortality.

The effects of consuming animal-derived products

Numerous connections have been made between the consumption of milk and dairy and increased risk of prostate cancer development [20]. Diets high in dairy products may increase the level of insulin-like growth factor-1 (IGF-1) which in proven to take part in pathogenesis of prostate cancer [21]. A similar topic was raised in an experimental study that used prostate xenograft models and the results confirmed that a diet containing 20% plant protein supressed tumour weight by 37% compared with a 20% animal dairy protein diet [22]. Downer et al. in their study [23] presented conclusions that men with localized prostate cancer who consumed 3 or more servings of high-fat milk vs. 1 or less serving per day had higher prostate cancer-specific mortality.

Conversely, prostate cancer, postmenopausal breast cancer and lung cancer risk were measured in groups divided by frequency of consuming meat products by Gilsing et al. [24] This study found that vegetarians or 1 day per week meat consumers did not have lower risk of cancers mentioned above compered to group consuming meat daily. A higher risk of developing advanced prostate cancer was observed among individuals reporting no chicken or processed meat intake compared to these in the higher consumption group.

Certain nutrients and their properties

Plant-based diet is not only focused on avoiding meat and other animal products but on consuming nourishing food derived from plants. Multiple mechanisms may explain how higher intake of plant-based and lower intake of animal-based food affect prostate cancer risk.

Fiber is an important element in supporting bowel health and reducing constipation which is a key factor in maintaining urinary health [25, 26]. Dietary fiber has been proven to have anti-inflammatory properties and to stabilize insulin levels [27, 28]. This analysis [29] conducted by Deschasaux et al. on a group of more the three thousand men concluded that higher consumption of total and insoluble dietary fiber - especially from legumes - was inversely related to prostate cancer risk, whereas fiber from cereals, vegetables, fruits, or soluble sources were not.

A carotenoid red pigment found in tomatoes, fruits and some algae – lycopene – also has healthful properties. Its benefits include antioxidant and anti-carcinogenic properties. A study by Magbanua et al. [30] showed that lycopene supplements can modulate potential oxidative processes in stress response pathways. Lycopene supplementation is shown to reduce PSA levels in men with intermediate risk [31, 32].

One of the main sources of plant protein is soy and soy-based products. A study by Zhang et al. [33] provided a conclusion that soy consumption has protective properties against prostate cancer. Applegate et al. completed a meta-analysis [34] which demonstrated a connection between consumption of soy and their isoflavones (genistein and daidzein) and lower risk of prostatic neoplasia. Total soy food intake was associated with lower risk but fermented soy food intake, total isoflavone intake, and circulating isoflavones were not associated with risk of cancerogenesis. Tofu consumption also was linked to a significantly lower risk of developing prostate neoplasia [35]. Wang et al. [36] studied a potential connection between intake of nuts and prostate cancer and came to conclusion that there was no specific connection between nut consumption and prostate cancer incidence or prostate-related mortality, but they found a significant association with reduced overall mortality.

Summary

Prostatic neoplasia is a civilizational disease with a significant global burden. Although modern treatment methods are constantly being improved and perfected, it is needed to provide patients with comprehensive guidelines on lifestyle modifications, including dietary changes, that may help improve their quality of life after diagnosis and potentially reduce the risk of disease progression. Increasing evidence suggests that a plant-based diet may play a protective role in lowering prostate cancer risk, although more rigorous clinical studies are needed to confirm these findings. Raising awareness about modifiable risk factors, such as diet, is an essential element in preventative strategies. Healthcare providers should be encouraged to incorporate

comprehensive nutritional information into the standard treatment routines for patients diagnosed with prostate cancer. By doing so, they can offer a more holistic approach to care that not only addresses the disease itself but also supports overall health, potentially improving treatment outcomes and quality of life. Multidisciplinary approach combining medical treatment with patient education and lifestyle optimization may offer the best outcomes for men affected by this disease. Further investigation on this subject should be encouraged, focusing not only on therapeutic approaches but also on prevention and betterment of quality of life through lifestyle interventions.

Disclosure:

1. **Author's Contributions:**

   1. Conceptualization: Michalina Janiszewska
   2. Methodology: Beata Imbirska, Michalina Simachi
   3. Software: Marta Prager-Zimny
   4. Check: Michalina Cyrulik, Michał Hładki
   5. Formal Analysis: Natalia Ramlau
   6. Investigation: Dominika Kolenda, Zuzanna Fischer
   7. Resources: Marcin Podolak
   8. Data Curation: Zuzanna Fischer, Marta Prager-Zimny
   9. Writing – Rough Preparation: Michalina Janiszewska
   10. Writing – Review & Editing: Natalia Ramlau, Beata Imbirska
   11. Visualization: Michalina Simachi, Marcin Podolak
   12. Supervision: Michalina Cyrulik, Zuzanna Fischer
   13. Project Administration: Michalina Janiszewska
   14. Reciving Funding: Not applicable.

   All authors read and agreed with the published version of the manuscript.

2. Funding Statement:

This research received no external funding.

3. Institutional Review Board Statement:

Not applicable. As this article involves are view and synthesis of existing literature, rather than original research involving human subjects and institutional review board statements are not applicable.

4. Informed Consent Statement:

Not applicable

5. Data Availability Statement:

Not applicable

6. Conflict of Interest Statement:

The authors declare no conflicts of interest.

References:

1. Kim H, Caulfield LE, Rebholz CM. Healthy Plant-Based Diets Are Associated with Lower Risk of All-Cause Mortality in US Adults. Journal of Nutrition [Internet]. 2018 Feb 3;148(4):624–31. Available from: https://doi.org/10.1093/jn/nxy019

2. Selinger E, Neuenschwander M, Koller A, Gojda J, Kühn T, Schwingshackl L, et al. Evidence of a vegan diet for health benefits and risks – an umbrella review of meta-analyses of observational and clinical studies. Critical Reviews in Food Science and Nutrition [Internet]. 2022 May 16;63(29):9926–36. Available from: https://doi.org/10.1080/10408398.2022.2075311

3. Koutentakis M, Surma S, Rogula S, Filipiak KJ, Gąsecka A. The effect of a vegan diet on the cardiovascular system. Journal of Cardiovascular Development and Disease [Internet]. 2023 Feb 22;10(3):94. Available from: https://doi.org/10.3390/jcdd10030094

4. Bryant CJ. We Can't Keep Meating Like This: Attitudes towards Vegetarian and Vegan Diets in the United Kingdom. Sustainability [Internet]. 2019 Dec 2;11(23):6844. Available from: https://doi.org/10.3390/su11236844

5. Hemler EC, Hu FB. Plant-Based diets for personal, population, and planetary health. Advances in Nutrition [Internet]. 2018 Nov 27;10:S275–83. Available from: https://doi.org/10.1093/advances/nmy117

6. Shah UA, Merlo G. Personal and Planetary Health—The connection with dietary choices. JAMA [Internet]. 2023 May 8;329(21):1823. Available from: https://doi.org/10.1001/jama.2023.6118

7. Alcorta A, Porta A, Tárrega A, Alvarez MD, Vaquero MP. Foods for Plant-Based Diets: Challenges and Innovations. Foods [Internet]. 2021 Feb 1;10(2):293. Available from: https://doi.org/10.3390/foods10020293

8. Penuelas J, Krisztin T, Obersteiner M, Huber F, Winner H, Janssens IA, et al. Country-Level Relationships of the Human Intake of N and P, Animal and Vegetable Food, and Alcoholic Beverages with Cancer and Life Expectancy. International Journal of Environmental Research and Public Health [Internet]. 2020 Oct 3;17(19):7240. Available from: https://doi.org/10.3390/ijerph17197240

9. Grant WB. A multicountry ecologic study of risk and risk reduction factors for prostate cancer mortality. European Urology [Internet]. 2003 Nov 11;45(3):271–9. Available from: https://doi.org/10.1016/j.eururo.2003.08.018

10. Culp MB, Soerjomataram I, Efstathiou JA, Bray F, Jemal A. Recent global patterns in prostate cancer incidence and mortality rates. European Urology [Internet]. 2019 Sep 5;77(1):38–52. Available from: https://doi.org/10.1016/j.eururo.2019.08.005

11. Wilson KM, Mucci LA. Diet and lifestyle in prostate cancer. Advances in Experimental Medicine and Biology [Internet]. 2019 Jan 1;1–27. Available from: https://doi.org/10.1007/978-3-030-32656-2_1

12. Oczkowski M, Dziendzikowska K, Pasternak-Winiarska A, Włodarek D, Gromadzka-Ostrowska J. Dietary Factors and prostate cancer development, progression, and reduction. Nutrients [Internet]. 2021 Feb 3;13(2):496. Available from: https://doi.org/10.3390/nu13020496

13. Rawla P. Epidemiology of prostate Cancer. World Journal of Oncology [Internet]. 2019 Jan 1;10(2):63–89. Available from: https://doi.org/10.14740/wjon1191

14. Thompson AS, Tresserra-Rimbau A, Karavasiloglou N, Jennings A, Cantwell M, Hill C, et al. Association of healthful plant-based diet adherence with risk of mortality and major chronic diseases among adults in the UK. JAMA Network Open [Internet]. 2023 Mar 28;6(3):e234714. Available from: https://doi.org/10.1001/jamanetworkopen.2023.4714

15. Piernas C, Perez-Cornago A, Gao M, Young H, Pollard Z, Mulligan A, et al. Describing a new food group classification system for UK biobank: analysis of food groups and sources of macro- and micronutrients in 208,200 participants. European Journal of Nutrition [Internet]. 2021 Mar 25;60(5):2879–90. Available from: https://doi.org/10.1007/s00394-021-02535-x

16. Mouzannar A, Kuchakulla M, Blachman-Braun R, Nackeeran S, Becerra M, Nahar B, et al. Impact of Plant-Based Diet on PSA level: Data from the National Health and Nutrition Examination Survey. Urology [Internet]. 2021 Jul 22;156:205–10. Available from: https://doi.org/10.1016/j.urology.2021.05.086

17. Loeb S, Fu BC, Bauer SR, Pernar CH, Chan JM, Van Blarigan EL, et al. Association of plant-based diet index with prostate cancer risk. American Journal of Clinical Nutrition [Internet]. 2021 Nov 5;115(3):662–70. Available from: https://doi.org/10.1093/ajcn/nqab365

18. Loeb S, Hua Q, Bauer SR, Kenfield SA, Morgans AK, Chan JM, et al. Plant-based diet associated with better quality of life in prostate cancer survivors. Cancer [Internet]. 2024 Feb 13;130(9):1618–28. Available from: https://doi.org/10.1002/cncr.35172

19. Liu VN, Van Blarigan EL, Zhang L, Graff RE, Loeb S, Langlais CS, et al. Plant-Based diets and disease progression in men with prostate cancer. JAMA Network Open [Internet]. 2024 May 1;7(5):e249053. Available from: https://doi.org/10.1001/jamanetworkopen.2024.9053

20. Aune D, Rosenblatt D a N, Chan DS, Vieira AR, Vieira R, Greenwood DC, et al. Dairy products, calcium, and prostate cancer risk: a systematic review and meta-analysis of cohort studies. American Journal of Clinical Nutrition [Internet]. 2014 Nov 20;101(1):87–117. Available from: https://doi.org/10.3945/ajcn.113.067157

21. Harrison S, Lennon R, Holly J, Higgins JPT, Gardner M, Perks C, et al. Does milk intake promote prostate cancer initiation or progression via effects on insulin-like growth factors (IGFs)? A systematic review and meta-analysis. Cancer Causes & Control [Internet]. 2017 Mar 30;28(6):497–528. Available from: https://doi.org/10.1007/s10552-017-0883-1

22. Fontana L, Adelaiye RM, Rastelli AL, Miles KM, Ciamporcero E, Longo VD, et al. Dietary protein restriction inhibits tumor growth in human xenograft models of prostate and breast cancer. Oncotarget [Internet]. 2013 Nov 23;4(12):2451–61. Available from: https://doi.org/10.18632/oncotarget.1586

23. Downer MK, Batista JL, Mucci LA, Stampfer MJ, Epstein MM, Håkansson N, et al. Dairy intake in relation to prostate cancer survival. International Journal of Cancer [Internet]. 2017 Feb 10;140(9):2060–9. Available from: https://doi.org/10.1002/ijc.30642

24. Gilsing AMJ, Weijenberg MP, Goldbohm RA, Dagnelie PC, Van Den Brandt PA, Schouten LJ. Vegetarianism, low meat consumption and the risk of lung, postmenopausal breast and prostate cancer in a population-based cohort study. European Journal of Clinical Nutrition [Internet]. 2016 Mar 2;70(6):723–9. Available from: https://doi.org/10.1038/ejcn.2016.25

25. Maeda T, Tomita M, Nakazawa A, Sakai G, Funakoshi S, Komatsuda A, et al. Female Functional Constipation Is Associated with Overactive Bladder Symptoms and Urinary

Incontinence. BioMed Research International [Internet]. 2017 Jan 1;2017:1–5. Available from: https://doi.org/10.1155/2017/2138073

26. Yang J. Effect of dietary fiber on constipation: A meta analysis. World Journal of Gastroenterology [Internet]. 2012 Jan 1;18(48):7378. Available from: https://doi.org/10.3748/wjg.v18.i48.7378

27. Ma Y, Griffith JA, Chasan-Taber L, Olendzki BC, Jackson E, Stanek EJ, et al. Association between dietary fiber and serum C-reactive protein. American Journal of Clinical Nutrition [Internet]. 2006 Apr 1;83(4):760–6. Available from: https://doi.org/10.1093/ajcn/83.4.760

28. Hu J, Wang J, Li Y, Xue K, Kan J. Use of dietary fibers in reducing the risk of several cancer types: an umbrella review. Nutrients [Internet]. 2023 May 30;15(11):2545. Available from: https://doi.org/10.3390/nu15112545

29. Deschasaux M, Pouchieu C, His M, Hercberg S, Latino-Martel P, Touvier M. Dietary Total and Insoluble Fiber Intakes Are Inversely Associated with Prostate Cancer Risk. Journal of Nutrition [Internet]. 2014 Apr 1;144(4):504–10. Available from: https://doi.org/10.3945/jn.113.189670

30. Magbanua MJM, Roy R, Sosa EV, Weinberg V, Federman S, Mattie MD, et al. Gene Expression and Biological Pathways in Tissue of Men with Prostate Cancer in a Randomized Clinical Trial of Lycopene and Fish Oil Supplementation. PLoS ONE [Internet]. 2011 Sep 1;6(9):e24004. Available from: https://doi.org/10.1371/journal.pone.0024004

31. Grainger EM, Moran NE, Francis DM, Schwartz SJ, Wan L, Thomas-Ahner J, et al. A Novel Tomato-Soy Juice Induces a Dose-Response Increase in Urinary and Plasma Phytochemical Biomarkers in Men with Prostate Cancer. Journal of Nutrition [Internet]. 2018 Aug 22;149(1):26–35. Available from: https://doi.org/10.1093/jn/nxy232

32. Zu K, Mucci L, Rosner BA, Clinton SK, Loda M, Stampfer MJ, et al. Dietary lycopene, angiogenesis, and Prostate Cancer: A Prospective Study in the Prostate-Specific Antigen Era. JNCI Journal of the National Cancer Institute [Internet]. 2014 Jan 24;106(2):djt430. Available from: https://doi.org/10.1093/jnci/djt430

33. Zhang Q, Feng H, Qluwakemi B, Wang J, Yao S, Cheng G, et al. Phytoestrogens and risk of prostate cancer: an updated meta-analysis of epidemiologic studies. International Journal of Food Sciences and Nutrition [Internet]. 2016 Aug 9;68(1):28–42. Available from: https://doi.org/10.1080/09637486.2016.1216525

34. Applegate CC, Rowles JL, Ranard KM, Jeon S, Erdman JW. Soy consumption and the risk of prostate Cancer in Men: an updated systematic review and meta-analysis. The FASEB

Journal [Internet]. 2017 Apr 1;31(S1). Available from: https://doi.org/10.1096/fasebj.31.1_supplement.790.35

35. Hwang YW, Kim SY, Jee SH, Kim YN, Nam CM. Soy food consumption and Risk of Prostate Cancer: A Meta-Analysis of Observational Studies. Nutrition and Cancer [Internet]. 2009 Sep 3;61(5):598–606. Available from: https://doi.org/10.1080/01635580902825639

36. Wang W, Yang M, Kenfield SA, Hu FB, Stampfer MJ, Willett WC, et al. Nut consumption and prostate cancer risk and mortality. British Journal of Cancer [Internet]. 2016 Jun 9;115(3):371–4. Available from: https://doi.org/10.1038/bjc.2016.181