Ben Burke

The Woodlands High School

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Red Meat Consumption and Cancer Risk Prevention

Cancer is the second leading cause of death in the United States. This year alone, there are 1.9 million cases of cancer, of which 608,500 people will die ("Cancer Facts & Figures 2021"). Of these cancers, 14.8% are breast, 13.1% are prostate cancer and 7.9 % are colon with 679,530 recent cases and 130,710 deaths (see table 1). Interestingly, these three types of cancers are linked to red meat consumption, which makes up a large part of the Western diet. According to the University of Michigan's Center for Sustainable Systems, during 2019, there were 185 pounds of meat per person available for consumption, an increase of 11 pounds from 1969 to 2019 ("U.S. Food System Factsheet").

Background

The literature shows there is a significant link between eating red meat and developing cancer. The World Health Organization has classified red meat as a group 1 carcinogenic, putting it in the same category as tobacco and alcohol (Raypole 1). Red meat ranked as a group 1 carcinogenic with tobacco and alcohol emphasizes the seriousness of eating red meat. It also shows that red meat is most likely a leading cause of cancer death. Dr. Frank Hu et al. performed a seven-year study on 37,000 individuals' eating patterns and discovered, "... one additional serving per day of unprocessed red meat...raised the risk of total mortality by 13%. An extra serving of processed red meat (such as bacon, hot dogs, sausage, and salami) raised the risk by 20%" (Wein 1). This confirms that red meat kills people and processed meat is worse than

unprocessed meat. Hintze, another researcher, compares African American diets to rural African diets and finds a.06% increase in colon cancer in African Americans (79). This proves the Western diet is unhealthy and has higher colon cancer rates. The Western diet involves a lot of red meat. As Groschel et al. put it, “animal-derived fat is a risk factor for common colon cancer” (2). More specifically, it isn’t the red meat that is the problem, but the animal fat in red meat that causes cancer. This is a critical correlation because it identifies animal fat, in contrast to other healthy fats, that can cause cancer.

Refutation

A landmark study by Turner and Lloyd in 2017 challenged the link between red meat and cancer. They examined 40 epidemiological studies and found insufficient evidence to support red meat causes cancer. They find it is impossible to isolate eating red meat to cancer because other variables like obesity, family history, smoking, and alcohol are also linked to breast, colon, and prostate cancer (813). However, this study does not negate the potential for red meat to cause cancer. Kuzu et al. solve this research dilemma by advocating for the use of “... preclinical studies to examine intracellular cholesterol on cancer development” (2063-2064). Kuzu et al. use intracellular studies to look at a person’s diet and cholesterol and determine the effect on cells. They find cholesterol-damaged DNA cells cause inflammation, which also causes cancer.

Inflammation and Cancer Progression

It’s not the red meat that causes cancer; it’s the inflammation that damages DNA and causes cancer. Many studies propose that red meat consumption causes inflammation, which causes cancer. Chronic inflammation occurs from the antibodies reacting against the tumor, which promotes tumor growth (Samraj et al.345). Once a tumor develops, standardized medicine requires chemotherapy. Doughtery says “... current chemotherapeutic treatment approaches are

unsuccessful; increasing attention must focus on chemopreventive efforts" (1-2). Chemopreventive efforts include eliminating red meat for more functional foods and taking statins to reduce inflammation can reduce the cancer statistics for breast, colon, and prostate cancer.

Solutions

Functional Foods

Giving up red meat leaves room to eat healthier foods. One natural, inexpensive way for people to get the vitamins and nutrients is to eat functionally. Eating functionally includes eating food with anti-cancer properties to reverse the effects of previous red meat consumption and restore healthy cells. Kim et al. suggest anti-inflammatory foods rich in "... luteolin, CLA, butyrate, methionine, resveratrol, curcumin, quercetin, EGCG" (204). Many foods are antioxidants, which means they clean impurities out of the body for better cell functioning. Aghajanpour et al. find, "...soy and phytoestrogen foods are anti cancer and the cancers are breast and prostate." They recommend eating low cholesterol foods like fruits, vegetables, poultry, fish, legumes, and nuts (769). Switching from a Western diet that includes red meat to a healthy diet that does not include red meat prevents tumorigenesis even after colon cancer has begun (Groschel 1). When people are unable to make this switch, statin use is an alternative.

Statin Usage

Americans should check their cholesterol and understand its link to cancer. Red meat is high in cholesterol. Cholesterol can be controlled through statin use, which lowers cholesterol and inhibits carcinogenesis. From an extensive 14 year study, Kitahara contends, "... there is evidence that high cholesterol, or factors correlated with it, may be associated with the risk of several malignancies, including cancers of the prostate, breast and colon" (1597). As cancer cells

grow, cholesterol has proved to be a direct link within the cell which causes cell proliferation. Cell proliferation causes cancer to grow. Nielsen proves this when he says, “Cancer cell proliferation is seen clinically as cancer growth and metastasis, and ultimately results in the death of a patient” Nielson goes further when he says,” A reduction in the availability of cholesterol could lead to decreased proliferation and migration of cancer cells” (1793). This contends that a decrease in cancer cell growth is directly related to less cholesterol. One way to reduce cholesterol is through the use of statins.

Nelson et al. believe, “Statin use in patients with cancer is associated with reduced cancer-related mortality” (1793). If statins can prevent cancer death, they are a cost-effective, viable alternative for people who refuse to give up red meat. Todoric finds, “... exerting anti-inflammatory and other effects, statins also reduce the risk of development of several cancers including colorectal cancer, HCC, and breast cancer” (899). Statins are a repurposed drug that offers a cost-effective treatment for inflammation that causes cancer. They are far less expensive than chemotherapy and radiation, which often have poor outcomes.

Conclusion

Red meat is a large part of the Western diet, and it is carcinogenic. The three central cancers linked to red meat intake are colon, breast, and prostate cancer. These cancers constitute approximately 35.8% of all cancers. To prevent cancer, Americans should have dietary interventions that involve replacing red meat with functional foods rich in vitamins and nutrients such as fruits, nuts, vegetables, poultry, and legumes. However, if an individual cannot give up red meat, they should consider a pharmaceutical intervention that includes statin usage for high cholesterol. It is the high cholesterol that causes inflammation which then damages DNA and causes cancer. As Hippocrates once said, “Let food be thy medicine and medicine be thy food.”

Appendix

Table 1

Cancer Statistics for Cancers that Can Be Attributed to Red Meat

Cancers related to Eating Red Meat	Number of New Cases	% of New Cases	Number of Deaths from Cancer	% of Deaths to Total Cancers
Breast Cancer	281,500	14.8%	43,600	7.2%
Prostate Cancer	248,530	13.1%	34,130	5.6%
Colon/Rectum Cancer	149,500	7.9%	52,980	8.7%
Cancer Total Amounts	679,530	35.8%	130,710	21.5%

Note. Data for breast cancer from "Cancer of the Breast (Female) - Cancer Stat Facts," by the National Institute of Health, 2021 (https://seer.cancer.gov/statfacts/html/breast.html). Data for prostate cancer from "Cancer of the Prostate - Cancer Stat Facts," by the National Institute of Health, 2021 (https://seer.cancer.gov/statfacts/html/prost.html). Data for colon and rectum cancer from "Cancer of the Colon and Rectum - Cancer Stat Facts," by the National Institute of Health, 2021 (https://seer.cancer.gov/statfacts/html/colorect.html).

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