

The commitment to Torah U'Mada invites us to investigate all areas of life through the lens of Torah and science. Of the many areas in life that require investigation, the consumption of red meat is one that is worth studying.

The Torah relates that the first time consumption of red meat was permitted was during the time of Noach. It was not until later that, this permission turned into a commandment when G-d formally gave the mitzvah to the Jewish people to slaughter and eat animals as part of the korbanot. In Mishlei, Shlomo Hamelach advises us to consume meat in moderation and not in excess.

Throughout the Gemara, there are numerous discussions about the consumption of red meat. In Pesachim (109a), it is written that red meat is consumed on joyous occasions such as the holidays. Masechet Pesachim (42b) also discusses the benefits that the consumption of fatty meat has on the body as a whole. In Nedarim (49b), it is noted that meat is more nourishing than vegetables or grains. The Gemara in Ketubot (60b) notes that pregnant women who eat meat will have robust children. [1] From glancing at these primary sources, it seems as if the Torah views the consumption of meat as something generally positive and beneficial.

In Sanhedrin (59b), the Tannaim discuss the reason why the consumption of meat permitted to man only at the end of Noach's life. One of the opinions in the Gemara is that at first, Adam had no desire to eat meat, and man acquired a carnivorous nature only after the sin and at the end of Noach's life. Because of this transformation in character, G-d allowed man to eat meat. This opinion questions the immorality of consuming meat by explaining that the change reflects the high moral standard of abstaining from meat consumption because it was only allowed after Adam sinned. The implication is that man should aspire to the highest level of moral conduct and abstain from consuming meat. The other explanation is that before the sin of Adam, humans were able to get all their nutrients from plants, but by the end of Noach's life, the supply of consumable plants was limited and man had to substitute meat into his diet in order to get all the necessary nutrients. From this explanation it is clear to Rabbi Bleich, an expert on ethics, that red meat contains nutrients that are necessary for man.

Rabbi Bleich not only shows through the Gemara the nutritional benefits of red meat but also discusses the practical obligation in present times of consuming red meat. Rabbi Bleich references the Gemara in Pesachim (109a) which notes, Ein Simcha Elah be'Basar... referring to the time of the Beit Hamikdash. The Jewish people were obligated to bring korbanot, consisting of red meat, on the holidays in order to experience the joy of the day. It is debated if the obligation to consume meat on the

holidays still applies, even after the destruction of the Beit Hamikdash. Many poskim, such as the Ritva and the Rashbash, are of the opinion that in present times, there is no absolute obligation to consume meat on the holidays. However, the Rambam in his Hilchot Yom Tov and in the Tur disagree and explain that rejoicing on Yom Tov is done by meat consumption, especially red meat. Regardless if there is a formal obligation, it is clear to many Poskim that consumption of meat was encouraged and praised because of the enhancement it brings to the joyfulness and festivity of the holidays. Therefore, abstaining from meat would not have been praised by Chazal. [2]

Throughout Jewish history, consumption of red meat existed, either as part of the korbanot or for a different reason. Now that the nutritional benefits and the value the Rabbis have placed on red meat consumption have been introduced, we will discuss cases that possibly indicate otherwise.

The life and kingship of King Yehoram is described in Divrei Hayamim. At the end of his life it is written, "The Lord smote him in his bowels with an incurable disease. And it came to pass, that in the process of time, after the end of two years, his bowels fell out by reason of his sickness: so he died of sore diseases..." (Divrei Hayamim II: 21: 5) Modern day physicians try to understand the disease that afflicted King Yehoram's bowels. Based on the symptoms that are described in the text, many physicians and scientists conclude that his disease was colorectal carcinoma (CRC). The text describes it as a sickness of his bowel that was incurable- both common symptoms of CRC. Most likely, King Yehoram was around 38 years of age when he started to show symptoms, ultimately leading to his death, which is around the age when individuals with CRC are diagnosed. If it was CRC, it is probable that his disease reached the 4th stage of cancer which is when it began to metastasize to other organs and became untreatable as it followed a very malignant and incurable course. In this case, it most likely spread to his circulatory system, his lymphatic vessels, his perineurium, or other distal organs. [3] The disease that afflicted King Yehoram was CRC. As later discussed, science has shown that consumption of red meat can possibly be associated with CRC.

In the time of the Beit Hamikdash, the Kohanim were predisposed to gastrointestinal diseases. Ben Achiya, an official who served during the time of the second Beit Hamikdash who's role was to treat the Kohanim's gastrointestinal maladies that they experienced during their two weeks of service in the Beit Hamikdash. The Kohanim's diet is often implicated as one of the factors that most likely caused their digestive difficulties. Ben Achiya used his herbal knowledge and the addition of

fruits with antioxidants to treat the ill Kohanim and maintain their health. In their role, the Kohanim supervised the korbanot of the animals and often consumed a large portion of the sacrificed animals. The meat from the sacrificed animals that they ate was often roasted and/or broiled, cooking methods that tend to char the meat. Sometimes it was left undercooked, which according to medical literature, can cause diarrhea, since eating charred and undercooked meat is difficult and sometimes dangerous for the body to digest. Often wine is used as an antioxidant to aid in digestion, however, the Kohanim were not allowed to drink wine while in the Beit Hamikdash. By including herbs and special fruits in their diet, Ben Achiya introduced antioxidants to aid in the digestion of meat. [4]

In ancient and Talmudic times, there was no refrigeration to store raw or cooked meat, and the sh'chita of a cow generates more meat than can be physically and morally consumed in one sitting. Due to these conditions, consumption of red meat was limited during those times. However, in present times with the development of refrigeration, fresh raw meat can be stored for an extended period of time. As a result, there is now an opportunity for an over-dose of meat consumption cooked via various methods. This potentially presents many health risks such as colorectal, gastric, breast, and lung cancer.

The correlation between elevated cancer risk and consumption of red meat is possibly due to certain compounds found in red meat that have been proven as mutagenic. The mutagens are: N-Nitroso compounds (NOCs), Heterocyclic Amines (HCAs), and Polycyclic Aromatic Hydrocarbons (PAHs). In addition, red meat is a large source of heme iron, which has been associated with increased endogenous NOC formation. [5]

HCAs, PAHs, and NOCs are formed through the process of cooking red meat at high temperatures. HCAs result from amino acids, sugars, and creatine reacting at high temperatures. PAHs form when meat is smoked, charred, or cooked above an open flame leading to fats and juices dripping onto the fire. The fatty drips yield flames that contain PAHs, which then adhere to the surface of the meat. In addition, red meat is rich in fatty acids which when over consumed are possible cancer risk factors and a source of heme iron which can promote oxidative damage that has a positive correlation with cancer risk. [6]

Researchers have further studied the association between red meat and cancer. One study showed that when participants ate red meat that was charred outside and well done inside, they consumed greater amounts of dietary mutagens which led to an increase in colorectal cancer risk. A suggested method to possibly lower cancer risk is to reduce meat doneness. [7] A different study showed a statistically significant positive association between intake of pan-fried meats and oven broiled meats with cancer.

Pan-frying uses a small amount of oil, allowing the meat to reach very high surface temperatures. Based on this, researchers suggest to flip meat often, reducing cooking temperatures, or preheating the meats in a microwave prior to cooking, thus reducing HCA formation and possibly decreasing cancer risk.

Not only is the cooking method of red meat a factor in the association between red meat and cancer, but the diet that comes along with consumption of red meat affects the association. Data has shown that often diets that are high in red meat consumption leave out plant based foods such as fruits, vegetables, and dietary fibers which have cancer protective compounds. [6] Therefore, when consuming red meat, one should also consume vegetables or other antioxidants. This modern scientific knowledge validates a part of Ben Achiya's treatment plans for the Kohanim. The Gemara writes that he was an expert in herbal medicine. Although the kohanim were not allowed to drink wine while in the Beit Hamikdash, after their service he would give them various types of wine. Throughout their service, he added different herbs and fruits to their diet. These items that Ben Achiya included in the Kohanim's diet, contained antioxidants that aid in the digestion of the meat. Through these methods, he maintained their health and treated their intestinal disorders. [4]

A breast cancer study found a relationship between consumption of red meat during adolescence and premenopausal breast cancer. From puberty until a woman's first birth, women's breasts have regular division of undifferentiated cells causing the cells to have an increased susceptibility to cancer. The study found that women who consumed well done and fried meats on a regular basis had a 30-40% increase in breast cancer risk as compared with women who consumed the lowest amount of red meat that was cooked medium. Another study also found that growth hormones that were used in cattle farms caused a greater risk for breast cancer resulting in, regulation of growth hormone use in cattle farms. [8]

There is a concept in Judaism referred to as "shomer pesaim Hashem," G-d guards the fool. The understanding of this phrase is debated by many poskim. One opinion understands that it is limited to situations where it is difficult to avoid the risk and in such conditions, it is permitted to rely on G-d's help. A different understanding is that it only applies when the risk is minimal and in those cases, one can rely on G-d for help. From the research that has been done, it is clear that red meat has carcinogenic risks in addition to the many nutrients it contains. There is a question if one can rely on the verse "shomer pesaim Hashem" while consuming red meat in moderation. Because the risk is small, the halacha cannot prohibit red meat consumption and one can rely on "shomer pesaim Hashem." However, if scientific data would one day show

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that one is at complete risk for cancer as a result of consuming red meat, then this would not apply and one would be permitted to abstain from consuming red meat provided that the mitzvah to consume meat at certain times is not in jeopardy. [9]

By studying the Torah and scientific literature, a balance in consumption of red meat can be found. The Jewish primary sources discuss the praise of red meat as something that brings us joy and as a pathway to connect to G-d. However, later sources discuss the digestion difficulties that the Kohanim suffered most likely as a result of the meat from the korbanot. Scientific literature offers an explanation for why meat from the korbanot

caused the digestion difficulties. Yet, science has also shown ways to consume meat in a way that will decrease some of its health risks thus allowing for its consumption on those occasions deemed appropriate by the Rabbanim.

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