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These estrogen-like compounds are structured similarly to estrogen, but do not bind firmly to receptors like estrogen does. Despite the fact that they exhibit similar effects on our cells, phytoestrogens are not estrogens. Phytoestrogens merely act as weak estrogenic compounds in the body. This acting is what has contributed to much of the confusion around the tofu estrogen myth. The word phyto is actually Latin for plant. So phytoestrogens are just estrogen-like compounds in plants. Not so scary now, is it?Furthermore, phytoestrogens bind to completely different receptors than does estrogen. We have known this for a decades, but like the protein-combining myth, the tofu estrogen myth, just won't die.The study that proved there is a second receptor site was published over 30 years ago. This discovery lead researchers to question whether or not this additional receptor site had the same estrogen effects as did the first site. Rightfully named alpha and beta, these estrogen receptors have two, totally different functions. Estrogen Receptors Alpha and BetaWe have two, unique estrogen receptors in our body: ER alpha (ERA) and ER beta (ERB). The classic receptor, ERA, is the binding site for estrogen and carries most of the negative attention surrounding phytoestrogens (not estrogen) in soy products.ERA receptors that are found in the liver secrete many of the harmful hormones that increase the risk of heart attack, stroke, and breast cancer. Eating meat and dairy foods that contain estrogen bind to these receptors. That may be why there is a link to red meat intake and higher cancer risk. Yet, research has concluded that phytoestrogens, found in tofu, bind to ERB receptors. The same receptors that secrete hormones that protect us from cancer, DNA damage, and cardiovascular disease.It's clear that ERB receptors protect us from cancer and ERA receptors tend to promote cancer growth. Since phytoestrogens bind to ERB receptors, we should focus on eating foods that contain them.Phytoestrogens in FoodIn food, phytoestrogens are referred to as isoflavones. There are three primary classes of isoflavones: genistin, daidzin, and glycitein. Genistin and daidzin are the two, most consumed isoflavones in our diet. They are also found in highest amounts in soybeans. Similarly, soy-based products like soy milk, tempeh, miso, and isolated soy supplements all contain isoflavones.Isoflavones carry several misconceptions, especially in the context of soy. One of the most widely misunderstood misconceptions is how they affect estrogen levels in humans. One of the first studies that prompted the scare around soy products stemmed from a 1998 study in mice, which showed that soy isoflavones caused existing breast tumors to grow. This lead many health experts to frantically rethink whether or not soy was beneficial for us. Except those same health experts overlooked an extremely important factor - mice metabolize soy differently than we do. When fed isolated soy, mice have levels of isoflavones in the bloodstream that range from 20 - 150 times higher than ours! This is why the results of scientific mice models should only serve as entry-level to our understand of human metabolism, rather than conclusive fact. Since those early mice models, human research has been dutifully conducted and showed promising results across the board.Do Phytoestrogens in Tofu Actually Protect Us Against Cancer?The short answer is yes! Studies using mice models could cause even the most savvy health experts to take this question out of context. However, overwhelming evidence continues to mount in favor of those consuming soy and having a reduced risk of cancer.Especially in Asian populations where the average consumption of soy is significantly higher than that of Westernized populations. What's adolescents have developing breast tissue that is more susceptible to the benefits of soy.Although, there is still a benefit for older women who consume soy. A landmark study from 2008 showed that women who consumed ½ cup of tofu per day had a 30% greater breast cancer risk reduction than those who consumed little to none. Even breast cancer survivors benefit from eating tofu! A group of researchers combed through the data of three different studies that followed almost 10,000 breast cancer survivors for an average of 7.4 years. They found that those who ate the highest amounts of soy per day had a 25% reduction in tumor recurrence. Pretty remarkable considering that the "highest amounts of soy" were equivalent to just one cup of soymilk per day. Clearly, eating tofu at any stage in a women's life has remarkable benefit for reducing the risk and recurrence of breast cancer. But what about men? Let's look at what science says.Read this next - Is Tofu Healthy? 21 Benefits and DisadvantagesSoy Protects Men Against CancerOne study looked at 100 Chinese men and their plasma concentrations of genistein, one of three isoflavones in soy. They found that of those 100 men, the ones that had the highest levels of genistein also had the lowest risk of developing prostate cancer.Another large meta-analysis (a summary of multiple studies) analyzed 11 studies and found a significant inverse relationship between soy intake and lung cancer risk. That is, the more soy consumed, the less chance subjects would develop lung cancer. Not only that, when they subdivided the meta-analysis using the five highest quality studies, that risk reduction was even greater; 30% compared to 23%!Soy Does Not Cause Man BoobsSurprise, surprise! Contrary to popular belief, any amount soy consumption does not cause the medical condition known as gynecomastia (Latin translation - 'ladylike boobies') in men. In all of history, there have only been two (yes, just two) cases of gynecomastia linked to soy consumption. The first was a teenage boy who consumed 19 to 20 servings of soy per day. That is the equivalent to eating 10 cups of edamame per day, far from any normal amount of soy consumption.The second case of gynecomastia related to soy consumption was similar. Although this time it involved a 60-year-old man who drank 12 cups of soy milk per day. Again, an outlandish amount of soy consumption in a normal diet.To further the point, a large meta-analysis conducted in 2010 concluded that "neither soy foods nor isoflavone supplements alter measures of bioavailable T concentrations in men." So the long played out fear of plummeting testosterone levels in men from consuming soy is outright false.Should Both Men and Women Eat Tofu?As you can see now, tofu does not contain estrogen! Unless you receive a medical diagnosis in which tofu is harmful, then yes, men and women should eat tofu. With the numerous benefits shown in both short-term and long-term studies, tofu should be included in a healthy diet. It is typically referred to in vegan and vegetarian diets, but can also be a powerful food replacement for those who eat an omnivorous diet.Try this Perfectly Seasoned Tofu for BreakfastNot a Fan of Tofu? Eat These InsteadTry tempeh! Made using fermented soybeans, tempeh is a versatile ingredient that can also be used as a meat substitute. Tempeh is high in both isoflavones and protein (1 cup = 30g protein). You can add it to stir-frys, burgers, or even make your own crispy buffalo chik'n tenders!Whole soybeans (think edamame) are the most practical way to ingest beneficial phytoestrogens from soy. Super easy to prepare, soybeans can also be added to a variety of recipes. My personal favorite is in salads!Try this Asian Chopped Salad with Peanut SauceSoy milk is another form of minimally processed soy that is a substitute for dairy milk. The consistency of soy milk is close to that of whole dairy milk, making it an ideal transition food towards a plant-based diet. Try it out in your morning smoothie!Lastly, miso is made from soy and has a whole host of benefits that extend far beyond cancer. Typically found in soup, miso contains several vitamins that are readily absorbable due to the fermentation process. Like tempeh, miso uses strains of fungi that help breakdown the cell walls of the soy, making it easier on our digestive systems. Tofu Estrogen Myth TakeawaysEating tofu and other soy foods has several health benefits. The most observable scientific benefit is that of reduced cancer risk in men and women.This is due to the ability of phytoestrogens to attach to different receptors sites within our cells (ERB receptors). These phytoestrogens are quite literally our dietary the keys, that unlock the amazing benefits surrounding disease protection. Incorporating whole food sources of soy into your diet is the best way to reap the benefits! Recipes like this and this can help get you started! Finally, keep highly processed soy fillers like mock meats, powders, and other prepared soy creations to a minimum. While those foods taste great, they don't serve the same benefits as the whole food version.Do you enjoy eating tofu, tempeh, and other soy foods? Share your answer in the comments below.