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# WHAT PEANUT BUTTER DOES TO YOUR BODY

While "nut" is in the name, peanuts are technically legumes. As opposed to nuts like almonds and walnuts, which grow on trees, peanuts grow underground. Along those lines, many refer to peanuts as ground nuts. Some even refer to them as the gouber pea, ground pea, pindar nut, earth-nut, ground bean, or even goober. Regardless of what they're called, in the United States, peanuts (and peanut butter) are by far the most popular "nut," comprising 67% of all nut consumption.

But what do peanuts do to your body? Are they healthy? Are they fattening? Here's the low-down on this pseudo-nut.

#### **Peanuts and Nutrition**

A one-ounce (1/4 cup) serving of peanuts contains:

Calories: 164Total Fat: 14g

o Saturated Fat: 2g

Total Carbohydrate: 6g

o Dietary Fiber: 2g

o Sugars: 1g

Protein: 7g

Vitamins and minerals:

o Copper: 0.42mg (47%)

o Manganese: 0.71mg (36%)

o Niacin: 4.4mg (28%)o Folate: 87.6mcg (22%)

o Biotin: 6.4mcg (21%)
o Vitamin E: 3.4mg (20%)
o Phosphorus: 137mg (20%)
o Thiamin: 0.23mg (19%)
o Magnesium: 49mg (12%)

o Zinc: 0.9mg (6%)o Choline: 15.5mg

By definition, peanuts are technically a "good" source of protein, providing 10% of the Reference Daily Intake (RDI) per serving. However, research shows quite clearly and conclusively that the RDI for protein (64 grams per day) is far from optimal. In fact, 2 – 3 times that amount may be best for reducing body fat, increasing lean body mass, improving appetite control, improving performance, and supporting overall health.

Beyond that, peanuts are not a "complete" source of protein, as it doesn't contain all the essential amino acids (i.e., methionine). That doesn't make peanuts "bad"; rather, it's simply to state that it's not a great idea to rely on them for their protein content. After all, there are far more protein-dense, higher quality sources of protein. Having said that, peanuts contain more protein than any other nut.

With 77% of calories coming from fat, peanuts are a high-fat, calorie-dense food. 50% of the fat in peanuts is of the monounsaturated variety, while 32% is polyunsaturated fats, nearly all of which are omega-6 fatty acids. Hang on to that, as we'll be coming back to that shortly.

#### **Peanuts—Beyond the Nutrition Facts**

While peanuts are often recognized for their fat, protein, and vitamin E content, there's more to this legumes story than can be found above. Believe it or not, peanuts contain the antioxidant resveratrol, which is commonly associated with red wine and the skin of red grapes.<sup>1</sup> Resveratrol, which belongs to a category of polyphenols called stilbenoids, is produced by the peanut plant when exposed to stress (e.g., infected by a microbial pathogen). Peanut stilbenoids have been considered the major sustaining factor of the plant's resistance to disease.<sup>2</sup>

The health benefits of resveratrol may be many and have been well-established. A number of studies have demonstrated the anti-inflammatory activity of resveratrol and its ability to promote a healthy inflammatory response.<sup>3</sup>

Resveratrol has also been purported to prevent obesity, and several studies have demonstrated the anti-obesity super powers of this polyphenol. For instance, research has shown that resveratrol decreases the synthesis of fat and reduces the uptake of fat by the body's fat cells. In addition, resveratrol increases the body's ability to burn fat for fuel (in the muscles and liver).<sup>4</sup>

Interestingly, resveratrol has been shown to "brown" white adipose tissue (i.e., body fat), and along these lines, it also seems to increase metabolic rate and calorie expenditure via activation of brown adipose tissue (BAT) thermogenesis. Simply put, BAT is unique in that it burns body fat to produce heat (i.e., thermogenesis), and as a result, BAT thermogenesis is currently being investigated as an anti-obesity target.<sup>5,6</sup>

It may also come as a surprise that peanuts have a higher polyphenol (a category of plant-based antioxidants that includes stilbenes) content than almonds, Brazil nuts, cashews, macadamia nuts, and pine nuts. What's more, peanuts have a higher total antioxidant capacity than Brazil nuts, cashews, macadamias, and pine nuts.<sup>7</sup>

#### **Peanut Butter—Not Just Peanuts**

If you've ever taken time to review the ingredients and nutrition information on the various containers of peanut butter, you already know that, while mostly peanuts, peanut butter can be much more than that. Of course, there are a few brands that only contain peanuts, but those are few and far between.

Most peanut butter, particularly the popular brands, contain peanuts along with the addition of sugar, fat, and salt. This is critical to highlight. No, it's not that the amount of added sugar is going to make you fat. No, it's not that the amount of salt is necessarily a threat to cardiovascular wellness. No, it's not that the amount of added poor-quality fat is enough to ravage your health (unless it's partially hydrogenated oil; more on that below).

Rather, it's because this trio of ingredients, provided in precise amounts, that are known

as the "three pillars of processed foods." In his book *Sugar Salt Fat: How the Food Giants Hooked Us,* Pulitzer Prize-winning investigative journalist for the *New York Times* Michael Moss discusses how food manufacturers rely on salt, sugar, and fat to "override our dietary self-control" through foods "so perfectly engineered to compel overconsumption."

With sugar and fat intake, brain pleasure centers light up in functional magnetic resonance imaging studies—just as they would with an addictive drug, such as cocaine. Increasing the amount of sugar intake leads to a "bliss point" of maximum taste satisfaction, disposing you to crave sugar in a virtual addiction, Moss describes.

Moss stresses that "fat is an energy colossus. It packs 9 calories into each gram, more than twice the caloric load of either sugar or protein". For fat, instead of a "bliss point," there is a quite potent "mouthfeel" (dryness, gumminess, and moisture release).

That is, adding fat drives consumption for a number of reasons. On one hand, from an evolutionary standpoint, the body is designed to seek out calorie-dense foods. On the other hand, adding fat to processed foods enhances sensory characteristics like mouthfeel, texture, and overall tastiness of foods. Simply put, adding fat to foods makes them more enjoyable.<sup>9</sup>

When it comes to salt, says Moss, the food processing industry is completely hooked. It's a "miracle" ingredient that solves all their problems. On one hand, salt provides a flavor burst; on the other hand, salt serves as a preservative so "foods" can stay on the shelves for months. It also has the capability to mask "off-notes" in flavors that are not inherent to processed foods. Like sugar, salt has "addictive qualities."

Ask yourself this: Have you ever found that it's incredibly difficult to limit portion sizes when it comes to peanut butter? Better said, have you ever found that it's incredibly easy to overeat peanut butter? You wouldn't be alone if you said that you're the type of person who's been known to eat a half jar (or even an entire jar)...and still want more.

What you may not have realized is that most commercial peanut butter has the very same qualities as potato chips, pizza, French fries, and chocolate, which are commonly regarded as the most "addictive" foods.<sup>10</sup>

Bottom line is this: If you're going to choose peanut butter, your best bet is to choose natural peanut butter with the only ingredient being peanuts—NO added sugar, salt, or fat.

#### Peanut Butter and Trans Fats

As mentioned, peanut butter is not just peanuts, and one of the ingredients that is sometimes included is partially hydrogenated vegetable oil, which helps improve shelf-life and make peanut butter smooth and creamy. Partially hydrogenated oils are the primary dietary source of *trans* fatty acids.

Before delving into this topic further, it's far less common to see partially hydrogenated oils in peanut butter than it once was (for reasons explained below). What you're more likely to see, however, is fully hydrogenated vegetable oil, which are used for the same purpose but do not contain *trans* fats.

If you're not completely familiar with *trans* fatty acids, a good starting point is the recent determination by the United States Food and Drug Administration (FDA) that partially hydrogenated oils are not safe for human consumption.<sup>11</sup> Along those lines, the FDA will no longer permit the use of partially hydrogenated oils in processed foods.

As good as that news is, it's important to point out that the FDA set a compliance period of three years for food companies to remove partially hydrogenated oils from processed foods. Nutrition manufacturers have until June 18, 2018, to ensure their products no longer contain partially hydrogenated oils.

In the meantime, you still need to be vigilant about reading nutrition labels, including both the Nutrition Facts Panel and the ingredients list. In the case of the former, food manufacturers are required to list the amount of *trans* fats per serving. Having said that, if the amount of *trans* fat is below 0.5 grams per serving, manufacturers can label the product as containing ZERO.

However, because *trans* fats are detrimental to health at ANY level, it's imperative to read the ingredients list. If you see "partially hydrogenated vegetable oil" listed, please step away from the health bomb.

Nutritionally speaking, *trans* fatty acids serve no purpose, and as Erin Russell, Assistant Editor of the *Canadian Medical Association Journal*, puts it, "Partially hydrogenated oils are entirely artificial and would not be in our food supply if they weren't economically attractive to the food industry." <sup>12</sup>

Why are partially hydrogenated oils so attractive to the food industry? Production of partially hydrogenated vegetable oils was developed because of low cost, long shelf-life, and suitability for commercial frying and transport. Many restaurants use partially hydrogenated oils when they fry foods because these types of oils, which are the major dietary source of industrial-produced *trans* fats, can be used many times in commercial fryers. Further, partially hydrogenated oils have traditionally been added to many processed foods (such as peanut butter) to help increase shelf life and keep flavors stable.

The Institute of Medicine (IOM) recommends that consumption of *trans* fats is as low as possible.<sup>14</sup> In essence, industrial-produced *trans* fats are like tobacco in the sense that they're not beneficial at any dose. For instance, the IOM cites evidence that *any* intake of industrial-produced *trans* fats (above zero) will increase one's risk for cardiovascular disease.

But the problems don't start and stop with an increased risk of heart disease. In fact, there's evidence that suggests that a number of negative health outcomes are correlated with *trans* fat intake, including weight gain and obesity.<sup>15,16</sup> *Trans* fats have also been associated with an unhealthy inflammatory response, endothelial dysfunction, and decreased insulin sensitivity.<sup>17</sup>

Along the lines of weight gain, *trans* fat intake has been associated with abdominal obesity. <sup>16</sup> Even in the absence of excessive caloric intake, controlled animal studies have shown that *trans* fats are an independent factor for weight gain, including enhanced storage of abdominal fat. <sup>18</sup> In one study published in the journal *Obesity Surgery*, Brazilian researchers discovered that there was a higher content of *trans* fatty acids in the visceral fat of obese folks, suggesting that *trans* fats may be preferentially stored as deep abdominal fat. <sup>19</sup>

This is particularly worrisome because visceral fat (i.e., abdominal obesity) is associated with a laundry list of negative health outcomes and a "constellation of metabolic abnormalities," including<sup>20,21</sup>:

- High triglycerides
- Low levels of "good" cholesterol (i.e., HDL)
- High levels of apolipoprotein B (which is considered a better predictor of cardiovascular risk than the more commonly used LDL<sup>22</sup>)
- Small, dense LDL and HDL particles (small, dense particles are considered more detrimental than large, fluffy particles<sup>23</sup>)
- Unhealthy levels of inflammation
- Insulin resistance
- Poor carbohydrate tolerance and metabolism
- Leptin resistance

#### **Peanut Butter and Omega-6 Fats**

As mentioned above, about 32% of the fat in peanuts are polyunsaturated fats, nearly all of which are omega-6 fatty acids. For instance, a one-ounce serving of peanuts contains about 4400mg of omega-6 fatty acids. On the flip side, the same serving provides less than 1mg of omega-3 fatty acids. If you're keeping score at home, that's a 4400 to 1 ratio of omega-6 to omega-3 fats. Why is that important you ask?

Experts estimate that throughout human history the optimal ratio for consumption of omega-6 fatty acids (e.g., linoleic acid) to omega-3 fatty acids (e.g., alpha linolenic acid, DHA, EPA) was about 1:1. With the contemporary diet, this ratio has shifted dramatically in favor omega-6 fatty acids to 20:1.<sup>24</sup>

While there are multiple explanations for this heavy imbalance of omega fatty acids—including a decrease in omega-3 fatty acid consumption from freshwater fish—researchers attribute this in large part to the ubiquity of refined vegetable and seed oils (e.g., soybean oil) present in the Western diet.<sup>25</sup>

In a study published in the *American Journal of Clinical Nutrition*, researchers from the National Institutes of Health estimated that the average person's consumption of

soybean oil increased more than 1000-fold from the early 1900s to the beginning of the 21st century.<sup>25</sup>

This is important for a number of reasons. For instance, these omega-6 fats compete with omega-3 fats for "parking spots" within the cell membranes of the body. 26 It's this dramatic increase in linoleic acid (a type of omega-6 fat) that has led to corresponding decreases of key omega-3 fats EPA and DHA. Along those lines, take a look at the laundry list of benefits associated with these two essential omega-3 fatty acids (that you're missing out on by overconsuming omega-6-rich vegetable and seed oils):

- DHA (and to a lesser extent, EPA) is effective at reducing blood triglycerides.<sup>27</sup>
- DHA may have a profound anti-inflammatory effect on LPS-induced proinflammatory cytokines (e.g., IL-6, IL-1 beta).<sup>28</sup>
- DHA may have a favorable effect on HDL particle size, and DHA increases HDL-C (i.e., "good" cholesterol) levels.<sup>27,29</sup>
- DHA is present in ALL organs, and it is the predominant omega-3 fatty acid found in the brain and retinal tissue.<sup>26,30</sup>
- DHA has been shown to accumulate in areas of the brain involved in memory and attention such as the cerebral cortex and hippocampus, and DHA has been specifically found to improve both memory and reaction time.<sup>31,32</sup>
- EPA (and to a lesser extent, DHA) reduces blood levels of Arachidonic Acid (AA), which is the primary mediator of cellular inflammation, perhaps through inhibition of the delta-5-desaturase enzyme, which produces AA.<sup>26,33</sup>
- The ability of EPA to increase the EPA/AA may play a role in cardiovascular health. A recent study found that higher blood levels of EPA were associated with lower incidence of major coronary events.<sup>34</sup>
- EPA levels may be closely correlated with mood disorders, and controlled human trials have shown a benefit with EPA supplementation.<sup>35</sup>
- EPA may also boost the effectiveness of standard anti-depressant medications while reducing associated insomnia and tempering the aggression associated with some conditions.<sup>36</sup>

Balancing these essential fats is also very important when it comes to promoting a healthy inflammatory response. For example, omega-3 fatty acids have anti-inflammatory effects (e.g., suppress IL-1beta, TNF-alpha, and IL-6) whereas omega-6

fatty acids do not.<sup>37</sup> Even more, studies show that omega-6 fats promote inflammation, particularly when they are consumed in excess of omega-3 fats.<sup>38</sup>

Researchers attribute this imbalanced intake of omega fats to an increase in virtually all inflammation-related conditions including cardiovascular disease, diabetes, obesity, metabolic syndrome, irritable bowel syndrome, inflammatory bowel disease, rheumatoid arthritis, asthma, mood disorders, mental illness, autoimmune disease, and more.<sup>39</sup>

What's more, excess omega-6 consumption may also accelerate aging. As a normal cellular process, *telomere length* shortens with age. However, accelerated telomere shortening is associated with early onset of many age-related health problems, including coronary heart disease, heart failure, diabetes, increased cancer risk, osteoporosis, and decreased lifespan.<sup>40</sup>

Excess, omega-6 intake has also been shown to be associated with shorter telomere lengths and accelerated aging. 41,42 Conversely, research has shown that diets rich in the omega-3 fats EPA and DHA can protect, and in some cases, lengthen telomeres, and there's some evidence that shows supplementation with EPA and DHA increases the activity of telomerase, which is an enzyme that maintains, lengthens, and restores telomeres. 43–45

Along those lines, it appears that the ratio of omega-6 to omega-3 fats may be where the magic happens: Telomere lengths *increase* with *decreasing* n6:n3 ratios. In other words, increasing intake of omega-3 fats (through supplementation and eating fatty fish) and concomitantly reducing intake of processed foods (which contain refined omega-6-rich vegetable/seed oils) may have a positive impact on cellular aging.

In a study published in the *European Journal of Clinical Nutrition*, French researchers assessed the effects of a 10-week diet modification to decrease the ratio of omega-6 to omega-3 fats in healthy subjects on various health parameters, including inflammatory markers. <sup>46</sup> The researchers found that diet intervention (i.e., decreased omega-6 and increased omega-3 fatty acids) resulted in significant reductions in TNF-alpha and "multiple favorable effects on the metabolic and inflammatory profiles."

Additionally, the participants demonstrated significant increases in the hormone

adiponectin, which is associated with enhanced insulin sensitivity.<sup>47</sup> What's more, adiponectin is considered an important fat-burning hormone, as it has been shown to facilitate fat burning (i.e., fat oxidation) in both muscles and the liver.<sup>48,49</sup>

Along those lines, the 10-week diet modification did, in fact, result in a significant increase in fat oxidation. This finding is consistent with previous work in which researchers found that supplementation with 6 grams of omega-3 fatty acids for just 3 weeks significantly increased fat oxidation and resulted in 2.5 times greater fat loss compared to when participants supplemented with an equivalent amount of visible fat, which included vegetable oils high in omega-6 fatty acids (e.g., sunflower and peanut oils).<sup>50</sup>

With that said, you're not entirely to blame for the increase in omega-6 fatty acid consumption. In fact, advice to substitute industrial vegetable oils rich in these polyunsaturated fatty acids for animal fats high in saturated fatty acids has been a cornerstone of worldwide dietary guidelines for the past half century.<sup>51</sup> A good example is the long-standing recommendation to substitute margarine (laced with omega-6 fats and *trans* fats) for butter.

However, in a study published in the *British Medical Journal* in 2013, a group of researchers from the National Institutes of Health found that this advice is heavily misguided, and they concluded that "substituting dietary linoleic acid [i.e., vegetable and seed oils] in place of saturated fats increased the rates of death from all causes, coronary heart disease, and cardiovascular disease."<sup>52</sup>

While omega-6 fatty acids are indeed important, a deficiency is nearly impossible, as you'll get more than enough of these essential fats when you consume a diet rich in minimally-processed, nutrient-dense whole foods. You can start to reduce your consumption of omega-6 fatty acids by eliminating processed foods made with the following industrial vegetable and seed oils, which you'll find in all kinds of packaged goods (e.g., salad dressings, sauces, breads, baked goods, prepared foods, and more):

### Percentage of omega-6 and omega-3 fatty acids in common industrial vegetable oils:

Oil	Omega-6	Omega-3
Safflower	75	0
Sunflower	65	0
Corn	54	0
Cottonseed	50	0
Soybean	51	7
Peanut	32	0
Canola	20	9

#### **Peanut Butter and Aflatoxins**

Generally speaking, peanuts can be considered quite healthy. However, peanuts tend to be one of the greatest dietary sources of aflatoxins, a type of mycotoxin, which are toxic or carcinogenic secondary metabolites produced by fungi that infect foods such as peanut, corn, and grains. In other words, fungi such as *Aspergillus flavus* and *Aspergillus parasiticus* colonize peanut plants and produce these toxic compounds.<sup>53</sup>

In the short-term, humans are relatively resistant to the effects of aflatoxins; however, what happens with long-term exposure is uncertain at this point. Some human studies have shown that aflatoxins may cause adverse immune system effects, liver cancer, and stunted growth in children. Having said that, one study showed an 89% reduction in aflatoxin concentration during the production of peanut butter.<sup>54</sup>

Further, the United States Department of Agriculture (USDA) has strict requirements and stringent testing for aflatoxins in the food supply. For instance, the Agricultural Marketing Service (AMS) administers *Minimum Quality and Handling Standards for Domestic and Imported Peanuts Marketed in the United States.* The regulation requires domestically marketed peanuts for human consumption to be analyzed for aflatoxin by a USDA or USDA-approved lab. AMS consults with the Peanut Standards Board on program requirements.

#### **Peanut Butter and Appetite Control**

Studies have consistently shown that nut intake moderates appetite after consumption. Specifically, well-controlled human trials have shown that eating almonds and peanuts suppresses hunger and desire to eat and increases fullness. Studies have shown that after as little as four days of including peanuts increases feelings of satisfaction and levels of fullness.<sup>55</sup>

These are very important qualities when it comes to weight management. Reducing hunger can help increase the duration between meals. Meanwhile, a decreased desire to eat can help prevent eating when not truly hungry. On top of that, greater levels of satiety (feelings of fullness and satisfaction) may lead to smaller meal sizes.

Many people shy away from nuts because they are calorie-dense. Interestingly, studies show that nut intake results in a strong compensatory dietary response. In other words, people tend to "compensate" by eating fewer calories in subsequent meals. Although the numbers vary, it's suggested that the majority of calories provided by nuts are offset by spontaneous adjustments in one's complete diet.<sup>55</sup> Somewhat surprisingly, one study showed that peanut butter resulted in greater dietary compensation than whole peanuts, despite a weaker satiety effect.<sup>56,57</sup>

In one study, participants who were instructed to add peanuts to their diet compensated for 66% of the calories provided by nuts. What's more, the amount of weight gained was substantially lower (over 3 times lower) than what would have been expected.<sup>58</sup>

#### **Peanut Butter and Weight Management**

Overall, research shows that nut consumption (including peanut consumption) is consistently associated with lower body weight. Not only that, adherence to moderate-and high-fat weight-loss diets compared to low-fat weight-loss diets is better. Along those lines, the nutrient profile of moderate-fat diets tends to be superior.<sup>59</sup>

In a study published in the Journal of the *American College of Nutrition*, researchers found that peanut intake was associated with a significantly lower body mass index (BMI), a ratio of weight to height that is used as an indicator of health, in women with a

similar trend in men.60

Interestingly, when total calorie intake is not controlled, studies that add nuts to the normal diets of free-living folks have shown that nut consumption does not lead to weight gain. Even more, several studies assessing the role of nut consumption in weight-maintenance programs have resulted in a decrease in body weight.<sup>55</sup>

While peanuts and tree nuts are commonly regarded as high-fat, calorie-dense foods, what many don't recognize is that the body does not efficiently absorb all the fat and energy provided by them. A number of studies have looked at this phenomenon, and all showed substantial increases in the body's excretion of fat (and calories). For instance, one trial showed that 17.8% and 7% of the fat from whole peanuts and peanut butter, respectively, was excreted.<sup>61</sup>

#### **Peanut Butter and Glycemic Control**

In the Nurses' Health Study, consumption of peanut butter was inversely associated with poor glycemic control. For instance, women who consumed peanut butter more than four times a week had better glycemic control and insulin sensitivity compared with those who never or almost never ate peanut butter.<sup>62</sup>

In a recent study published in the *British Journal of Nutrition*, researchers found that consuming peanut butter or peanuts for breakfast can promote glycemic control throughout the day, even after eating a high-carb lunch.<sup>63</sup> In addition to this "Second Meal Effect," peanuts and peanut butter resulted in a significant reduction in the desire to eat for up to 12 hours, the result of a significant increase in the secretion of the hormones PYY, GLP-1, and CCK, which help suppress appetite.

#### **Peanut Butter and Heart Health**

In the Nurses' Health Study, researchers subdivided nut intake between all tree nuts and peanuts and peanut butter. Consumption of peanut products was associated with a decreased relative risk of coronary heart disease (CHD).<sup>64</sup> Participants who consumed peanuts two or more times per week had a relative risk of CHD of 0.66, while for other nuts the relative risk for consumption of two or more times per week was 0.79.

A recent report of the same study looking at a subgroup of women shows similar findings, as consumption of at least five servings per week of nuts or peanut butter was significantly associated with a lower risk of cardiovascular disease, with a relative risk of 0.56.65 Research shows that moderate-fat diets that contain peanuts result elicit a more favorable lipid profile after maintenance of weight loss compared to low-fat diets.66 In a recent well-controlled 30-week intervention study, researchers examined the effects of peanut consumption on blood lipids in healthy adults.67 They found that daily peanut consumption resulted in significant reductions in total cholesterol and triglycerides. Maintaining healthy levels of cholesterol and triglycerides are important variables for cardiovascular health.68

According to Purdue researcher, Dr. Richard Mattes, "Peanuts are the most widely consumed nut in this country. They are a rich source of monounsaturated fatty acids, magnesium, folate, vitamin E, copper, arginine, and fiber, all of which have cardiovascular disease risk-reducing properties." In a study published in the *Journal of the American College of Nutrition*, Mattes found that regular peanut consumption "lowers blood triglycerides and augments consumption of nutrients associated with reduced cardiovascular risk." <sup>69</sup>

"Peanuts are often viewed as unhealthy because they are high in fat," says Mattes. "But peanuts are rich in the types of fats that actually reduce cardiovascular disease risk and have strong satiety properties—meaning a person feels full after eating peanuts—so they do not pose a threat of weight gain. People can feel comfortable including them in their diet to take advantage of peanuts' reducing the risk of heart disease, without adding to body weight. We have learned that regular peanut consumption lowers triglyceride levels by as much as 24 percent—even in the group where peanuts were added to regular dietary intake. We also saw no significant change in body weight, despite adding 500 calories of peanuts a day for eight weeks."

Where did those calories go? According to research from Mattes and others, there are three potential answers:

- 1. Peanuts have a high satiety value, and that feeling of being full reduces the amount a person eats.
- 2. Peanuts trigger an increase in people's resting metabolic rate.

3. People don't chew nuts well, so people's bodies fail to absorb a portion of nuts' caloric energy.

#### **Don't Go Nuts**

Generally speaking, peanuts and peanut butter can be included as part of an overall healthy diet. Obviously, there are exceptions. For instance, peanut allergy is one of the most common food allergies, in which case peanuts can cause a severe, potentially fatal, reaction. It goes without saying that peanuts should be completely avoided in those cases.

For the overwhelming majority of folks, peanuts and peanut butter (along with tree nuts) may provide numerous health benefits. Having said that, peanuts are not synonymous with peanut butter. Along those lines, most commercially-available peanut butter contains added sugar, salt, and fat.

Research clearly and convincingly shows that this trio of ingredients has addictive qualities that can override hunger and lead to overconsumption. With that in mind, when choosing peanut butter, it's best to opt for natural (preferably organic) peanut butter made only with peanuts and no other added ingredients.

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