Are Over-the-Counter Diet Pills and Muscle-Building Dietary Supplements Safe? Research Shows the Answer Is No

1. Teens use dietary supplements for weight loss and muscle building—even though doctors say they shouldn’t. The American Academy of Pediatrics is strongly opposed to the use of supplements for weight loss and muscle building in adolescents. Yet a national survey found that 11% of teens had ever used a weight loss supplement. In the same survey, 5% of teens had used creatine, one of many dietary supplements sold for muscle building.


2. Unapproved drugs are often found in dietary supplements sold for weight loss, muscle building, and sexual function. An analysis of the Food and Drug Administration’s (FDA) Tainted Supplements database showed that between 2007 and 2016, 776 supplements from 147 different manufacturers were tainted by unlisted and potentially dangerous drug ingredients. Most of these adulterated supplements were sold for weight loss, muscle building, or sexual function.


3. Tainted supplements often remain on shelves and continue to be purchased for months and even years after an FDA voluntary recall. The FDA does not have the authority to prescreen dietary supplements for safety or efficacy before they hit the market and can step in only after reports of injury or death. Unfortunately, voluntary recalls by the FDA are largely ineffective.


4. Recalls are not enough to protect people from supplements containing unlisted, unapproved ingredients. In November 2009, the FDA banned Pai You Gou, a dietary supplement sold for weight loss after detecting in the product at least two banned pharmaceuticals, sibutramine and phenolphthalein, linked with well-documented serious side effects. A year after the recall, nearly 1 in 4 Brazilian women in a Massachusetts study were still using this product.


5. Dietary supplements marketed for weight loss and muscle building have dangerous side effects, including hepatitis and liver failure. The U.S. Centers for Disease Control and Prevention (CDC) documented a series of cases of severe acute hepatitis and liver failure of unknown cause. In further evaluation of this series, the CDC found that of the 29 confirmed cases, 24 patients reported using OxyELITE Pro, a dietary supplement sold for weight loss and muscle gain, within 60 days before illness onset.

6. Dangerous stimulants are often found in widely available supplements for weight loss and muscle building. When one stimulant is banned, supplement makers often continue using the banned substances or replace them with a related, potentially dangerous chemical. Many of these chemicals have never been tested for safety in humans.

(a) Researchers found N,α-DEPEA in a widely available muscle-building supplement. N,α-DEPEA is a banned and potentially dangerous designer stimulant closely related to methamphetamine.


(b) Half of supplements marketed as containing the herbal ingredient acacia rigidula were found to contain β-methylphenylethylamine (BMPEA). BMPEA is a stimulant that has not been assessed for safety or efficacy in humans. It is closely related to the banned compound DMAA, which has been associated with several deaths.


(c) Another DMAA substitute, 1,3-dimethylbutylamine (DMBA), has also been banned by the FDA. Despite the ban, researchers found at least a dozen supplements to contain DMBA in dosages ranging from 13 to 120 mg per serving.


7. Muscle-building supplements may lead to increased risk of testicular germ cancer in men. A study of nearly 1000 men found that men who developed testicular germ cancer had used more muscle–building supplements than similar men who did not develop testicular germ cancer. The association was particularly strong for use of two or more types of muscle–building supplements.


8. Many supplements with labels saying they contain “pro–hormones,” “natural steroids,” or “testosterone boosters” actually contain designer anabolic steroids—with dangerous consequences. Use of these compounds through dietary supplements is widespread. In younger men, these supplements may be a common cause of liver injury, problems with bile secretion, testicular disorders, growth of breast tissue, and infertility.


9. Diet pills may block the function of other drugs, including cancer treatments. Diet pills may also be associated with organ toxicity. Research suggests that the diet drug orlistat limits the function of a kind of protein, CES2, needed to activate a common cancer drug, PPD. Orlistat has also been associated with gastrointestinal issues, as well as liver toxicity.