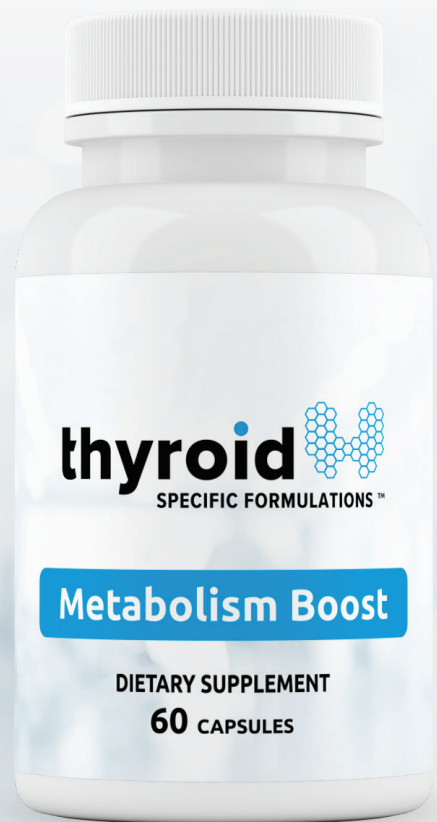




# Metabolism Boost



## Benefits

The ingredients in Metabolism Boost have been clinically proven to:

- Increase basal metabolic rate with thyroid disease
- Lower appetite
- Break down stored liver fat
- Reduce the absorption of fat and carbohydrate

## How to Use

Take two (2) capsules once daily in the morning with food. Use Metabolism Boost in conjunction with a weight loss program.

## Formulation

- White kidney bean extract - 400 mg
- Cayenne pepper fruit powder - 300 mg
- Choline - 250 mg
- Nigella - 100 mg
- Magnesium - 25 mg
- Zinc - 2 mg

## Thyroid Disease and Body Weight

Among adults with body mass index scores greater than 30, as many as 60% may have autoimmune thyroid disease.<sup>1</sup>



Even in adults without overt thyroid disease, body weight and visceral fat relate to thyroid levels. A TSH change of 1 unit relates to weight changes of 0.66 pounds for women, and 1.8 pounds for men.<sup>2</sup>

Weight loss resistance is the single most common symptom associated with thyroid disease. Some find that they never had weight struggles prior to the onset of thyroid disease. Others find that thyroid disease greatly amplifies ongoing weight struggles.

The specific symptoms include unexpected weight gain, weight loss only with extreme measures, or an inability to lose weight even with extreme measures.

## How Thyroid Disease Causes Weight Gain

Thyroid function can affect body weight for multiple reasons. The primary mechanism is the relationship between thyroid function and basal metabolic rate (BMR). The BMR is the number of calories that the body burns through thermoregulation and maintaining homeostasis.<sup>3</sup> It represents the largest source of energy expenditure by far for most adults. When thyroid function is impaired, BMR can be 40% lower than it would be otherwise.

Thyroid function can also have effects on weight due to changes in fluid retention, sodium balance, non-exercise activity thermogenesis (NEAT), and preferences in exercise frequency and duration.

## Weight Loss Supplements

### Mechanisms of Action

Supplements may help weight loss efforts through a variety of diverse mechanisms. Some mechanisms may not be safe or helpful when weight gain relates to thyroid disease. Others can be more appropriate. These include:

- **Appetite reduction** - decrease the amount of food preferred
- **Increase NEAT** - raise the amount of energy expended through daily activities
- **Lower inflammation** - decrease the amount of inflammatory triggers and associated hormones like leptin and adiponectin
- **Amylase blocker** - decrease the absorption of dietary starch
- **Lipase blocker** - decrease the absorption of dietary fat
- **Increase hepatic lipogenesis** - improve the breakdown of stored fat from within the liver
- **Raise diet induced thermogenesis** - increase the effect of meals on elevating the BMR

# TSF Ingredient Selection

In constructing Thyroid Specific Formulations, all ingredients considered must share the following properties.

## Thyroid Safety

All considered ingredients must be natural compounds that have been safely consumed by humans for centuries. They must be generally recognized as safe (GRAS) by toxicologists. Finally, they must not contain unsafe levels of iodine.

## Evidence and Efficacy

All considered ingredients must have high-quality evidence proving their efficacy. The best quality evidence is that which demonstrates significant positive outcomes on human subjects in multiple double-blinded controlled studies. These human subjects and the outcomes should be clinically relevant to the product's end-users.

## Ingredients

Following is a complete discussion of the active ingredients. It includes their relevance to thyroid disease, mechanisms of action, and a review of supportive research.

### White Kidney Bean Extract

White kidney beans (*Phaseolus vulgaris*) are similar to the common cannellini bean and are a rich source of resistant starch. Extracts of white kidney beans have been shown to slow the absorption of carbohydrates into the bloodstream.

A recent review of multiple clinical trials on white kidney bean extract (WKBE) showed that:

*"This particular dietary supplement has demonstrated its potential and ability to cause weight loss in numerous clinical trials in humans"<sup>4</sup>*

It appears to help by lowering the activity of the enzyme amylase which breaks complex carbohydrates into simple carbohydrates. They also reduce the rate at which carbohydrates leave the stomach and enter the small intestines.

WKBE also improves the gut microbiota. Some of these improvements have direct benefits to weight management, others can help the recovery of autoimmune diseases.<sup>5</sup>

## Representative Study

In a typical study, 62 overweight and obese adults took a supplement containing white kidney bean extract or a placebo for 9 months.

Compared to placebo, those taking WKBE experienced numerous health benefits including: loss of body weight, loss of body fat, a lower waist circumference, lower blood pressure, and lower total cholesterol.<sup>6</sup>

### Cayenne Pepper Fruit Extract

Cayenne extract is taken from the fruit of the cayenne pepper plant. It is the source of cayenne pepper, common in culinary usage.

In supplement form it has been shown to have numerous properties helpful for weight loss including:<sup>7</sup>

- suppress appetite, induce satiety
- enhance lipid metabolism
- enhance thermogenesis
- inhibit lipase and alpha amylase
- prevent adipocyte differentiation

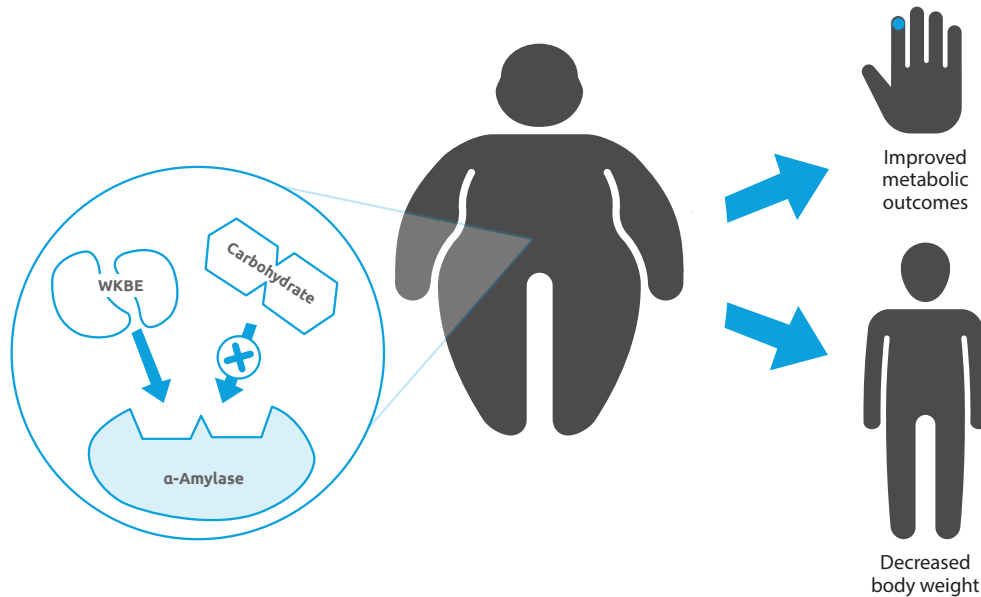
Researchers who have reviewed the medical literature concluded that capsaicin can:

- increase fat oxidation
- improve insulin sensitivity
- decrease body fat
- improve heart and liver function.<sup>8</sup>

At low doses, capsaicin is well tolerated and can still exert the above weight loss benefits.

In a recent clinical trial, 103 overweight and obese adults were given a supplement containing cayenne pepper extract or a placebo.<sup>9</sup>

Compared to those on the placebo, those taking cayenne experienced:



- more fat loss
- improved resting energy expenditure
- reduced symptoms of depression
- improved blood sugar metabolism
- lower inflammation

## Choline

Choline is a conditionally essential nutrient chemically related to the B-Vitamins folate, pyridoxine, and B-12. It can be synthesized by the body and found in dietary sources.

Many diets lack sufficient choline and many individuals are unable to metabolize the amounts they require. Thyroid disease has been shown to impair the body's ability to produce choline.<sup>10</sup>

Choline is an essential nutrient related to the water-soluble B-complex vitamins, folate, pyridoxine, and B12, and to the essential amino acid, methionine. It is synthesized in the body as well as consumed in the diet.

## Representative Study

In a double blind human clinical trial, 21 female athletes were given supplements with choline or placebo for seven days. None were instructed to undergo dietary modifications.

Compared with those on placebo, those taking choline had lower leptin levels, saw a 3% reduction in body fat. These changes came without decreased strength or changes in performance.<sup>11</sup>

## Nigella Sativa

Nigella sativa, also known as black cumin, is a culinary seed. It has been used for thousands of years as a traditional medicine and source of cooking oil in the Middle east. Its main medical properties have been as an anti-inflammatory and immune regulator.

Since it has a long history of use as a food, nigella is considered safe for general usage over a wide range of dosages.

Evidence shows that Nigella helps weight loss through an improvement in the breakdown of fat within liver cells and an increase in insulin sensitivity by muscle cells. It also may act as a lipase inhibitor, lowering the absorption of fat from the diet.

Nigella is known to block the production of fatty acids. It is considered one of the strongest known botanical medications for reducing the formation of triglycerides (fats) and blocking lipase, the enzyme that forms them.<sup>12</sup>

## Representative Study

In a recent clinical trial, people with thyroid disease were randomly distributed to receive a supplement containing either nigella or a placebo. Those receiving nigella saw significant improvements in body weight, body mass index, waist circumference, and hip circumference.

Despite the fact that there were no significant dietary differences between those taking nigella and those on placebo, none of these weight loss benefits were observed in participants in the placebo group.<sup>13</sup> The beneficial effects of nigella appeared to be independent of any dietary changes.

## Liver Support

Fatty liver is one of the main reasons for weight loss resistance with hypothyroidism. In this condition, the liver cells have too much triglyceride relative to glycogen and are unable to burn fat. If the liver cannot process fat through beta oxidation, weight loss becomes more difficult and rapid weight regain is more likely.

## Magnesium

Those with higher intakes of magnesium have lower odds of fatty liver and associated complications such as prediabetes.<sup>14</sup>

## Zinc

Zinc deficiency is common among those with thyroid disease since many with thyroid disease also have autoimmune gastritis. Low levels of zinc are known to contribute to several conditions including insulin resistance and advanced versions of fatty liver disease.<sup>15</sup>

## Supportive Strategies for Weight Loss

Weight loss is best thought of as occurring in two distinct phases - active weight loss and maintenance. Active weight loss should be limited to 4-5 week windows of time to prevent a reduction in the basal metabolic rate.

During weight loss, one should prioritize dietary protein and consume no less than 1 gram of protein per pound of lean body mass. Exercise should continue but should be limited to 20 minutes daily.

Please see the Metabolism Reset Diet book for detailed guidance on active weight loss.

## Directions

2 capsules once daily with food. Take at least one hour after thyroid medication.

## Supplement Facts

Serving Size 2 Capsules  
Servings Per Container 30

Amount Per Serving		%DV
Choline (as Choline Bitartrate)	250mg	45%
Magnesium (as Magnesium Oxide)	25mg	6%
Zinc (as Zinc Oxide)	2mg	18%
White Kidney Bean Extract	400mg	†
Cayenne Fruit Powder	300mg	†
Nigella (Black Cumin) Seed Powder	100mg	†

† Daily Value not established.

†† Daily Values based on a 2,000 calorie diet.

Other Ingredients: Gelatin (Capsule), Rice Flour, Magnesium Stearate



## Does not Contain

- Caffeine
- Stimulants
- Thyroid hormones
- Iodine
- GMO
- Gluten
- Dairy

Some may experience improved function of their microflora such as more regular and full bowel movements. This change may be more pronounced in the first few weeks of usage.

## Cautions

### Timing

- TSF Supplements must be taken at least an hour after thyroid replacement medication.

### Dosage Modification

- Those taking TSF supplements while on thyroid replacement medication (hypothyroidism, Hashimoto's) or thyroid suppression therapy (Graves' Disease) are advised to monitor thyroid levels closely. When thyroid antibodies reduce, some need decreases or other adjustments made to their medication.



## Medication Interactions

- Interactions can occur with many nutraceutical ingredients and prescription medications. If you are on prescription medication, please check with your doctor or pharmacist for specific guidance.

## Allergy Warning

- TSF products are contraindicated in individuals with a history of hypersensitivity to any of its ingredients.

## Pregnancy Warning

- If pregnant, nursing, an organ transplant recipient, or have multiple sclerosis, do not use TSF Products unless on the advice of and under the direct supervision of a health professional.

## Side Effects

### Choline

- Dose of choline in excess of 3500 mg daily may cause a fishy body odor, diarrhea, and excessive sweating. Metabolism Boost contains 250 mg of choline per serving.

### Magnesium

- High doses of magnesium in excess of 1000 mg may cause nausea, cramps, and loose stools. Metabolism Boost contains 25 mg of magnesium per serving.

### Zinc

- When used in doses in excess of 40 mg daily, elemental zinc can cause nausea and stomach pain in some people. Metabolism Boost contains 2 mg of zinc per serving.

## White Kidney Bean Extract

- White kidney bean extract has been shown to be safe and well tolerated. Some notice mild gas and bloating in the early days of usage.

## Cayenne Fruit Powder

- Cayenne fruit has been safely used as a food for millennia. High doses of cayenne can cause irritation in the stomach and intestines. It may also cause nausea and vomiting. Metabolism Boost contains 300 mg of cayenne per serving.



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