

## *A metabolite of DHEA (dehydroepiandrosterone) to support fat loss*

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Designs for Health's 7-Keto<sup>®</sup> provides the compound 3-acetyl-7-oxo DHEA, a stabilized form of 7-oxo DHEA. Once ingested, acetyl-7-oxo DHEA is cleaved to 7-oxo DHEA, a DHEA metabolite naturally found in the body, and usually referred to by the name "7-keto-DHEA" or sometimes just "7-keto." Supplementing with this compound may be beneficial for supporting fat loss by counteracting the natural decline in its synthesis during aging as well as during periods of stress. Moreover, unlike supplementing with DHEA, supplementing with 7-keto itself exerts metabolic effects without being converted into estrogenic or androgenic hormones.

As occurs with DHEA, 7-oxo DHEA levels are known to decline with age. By age 40, some may experience as much as a 40% drop in 7-keto DHEA and DHEA levels as compared to average levels at age 25.<sup>1</sup> Levels of 7-keto-DHEA may also be reduced during times of stress, since adrenal precursors may be diverted toward producing cortisol rather than DHEA.<sup>2,3</sup>

When under stress, the body produces higher-than-normal levels of cortisol and may divert adrenal precursor hormones towards synthesizing cortisol rather than DHEA.<sup>3,4</sup> In addition, it has been demonstrated *in vitro* that 7-oxo DHEA and cortisol interfere with each other's metabolism because they use the same enzyme system (11-beta-hydroxysteroid dehydrogenase). Hence, high cortisol levels may interfere with the conversion of DHEA to 7-oxo DHEA. Supplementing with 7-Keto<sup>®</sup> may counteract a decline in its levels due to aging or high cortisol. It is important to note that in addition to mental and physical stress, dieting may increase cortisol levels if the caloric restriction is too severe and/or the meals are not properly spaced throughout the day. Elevated cortisol, particularly over the long term, may interfere with fat loss even in the absence of increased food intake or decreased physical activity. Supplementation with 7-Keto<sup>®</sup> could potentially lessen the impact of this effect by competitively inhibiting 11 $\beta$ -HSD.<sup>1,2</sup>

### **Benefits\*:**

- Supports weight loss without the use of stimulants
- Promotes more weight loss than with diet and exercise alone
- Mitigates the decrease in resting metabolic rate (RMR) caused by dieting
- Supports thyroid hormone production
- Upregulates thermogenesis to support fat burning
- May help compensate for age-related decline in 7-keto DHEA production
- May help reduce cortisol levels by reducing local conversion of cortisone to cortisol; may compensate for cortisol-induced reduction of 7-keto DHEA

## **Fat Loss and Metabolism**

Numerous studies have shown that adding 7-oxo-DHEA to diet and exercise regimens results in greater fat loss and additional metabolic benefits compared to diet and exercise alone or compared to placebo.

This was demonstrated in a study in overweight but otherwise healthy adults. In a program that called for eight weeks of an 1800-calorie per day diet plus three supervised exercise sessions per week, the addition of 7-oxo-DHEA (100 mg B.I.D.) resulted in greater reductions in body weight, and more importantly, body fat, than the same regimen plus placebo.<sup>5</sup> The study also found that in those taking 7-oxo-DHEA, levels of triiodothyronine (T3) increased significantly compared to those on the placebo, without any significant changes to T4 or TSH. Higher levels of T3 could have a beneficial impact on overall metabolic rate, which may be responsible in part for the observed effects of 7-oxo-DHEA. Thyroid hormones may also induce mitochondrial uncoupling and heat generation, which would also contribute to the observed effects on fat loss.<sup>6</sup> Support for the production of T3 is noteworthy because caloric restriction combined with exercise has been documented to induce a hormonal shift to lower free T3 and higher reverse T3 in some individuals, resulting in a metabolic slowdown that prevents additional fat loss and may result in signs and symptoms of frank hypothyroidism even in the presence of normal TSH and/or T4.<sup>7,8</sup>

These findings were echoed in a later study that also assessed 7-oxo-DHEA in combination with diet and exercise. Compared to overweight but otherwise healthy subjects taking a placebo, individuals who took a product containing 7-oxo-DHEA (along with other supportive nutrients such as L-tyrosine, manganese, copper, and potassium iodide) experienced small but significant decreases in weight and BMI during an eight week intervention with exercise and a reduced calorie diet.<sup>9</sup> Subjects in the supplementation arm lost a mean of 2.15 kg ( $\pm$  2.38 kg) over the eight weeks, so the effect is not dramatic but subjects were ages 40-69 with a BMI ranging from 27-42 kg/m<sup>2</sup>. Losing body fat may become more difficult with age, so these factors are worth noting.

An additional edge 7-oxo-DHEA may have for dieters is that it may help prevent the decline in resting metabolic rate typically induced by low-calorie dieting. In a promising double-blind crossover study, in subjects following a low-calorie diet, 7-oxo-DHEA increased resting metabolic rate by an average of 1.4%, compared to a decrease of 3.9% during the placebo period.<sup>10</sup> The study was of short duration—just seven days—and the increase in metabolic rate was small, but for individuals who struggle to lose weight, 7-Keto® can provide a small extra edge that could have a larger impact over the long term.

## Enhancing Thermogenesis

Research has shown that 7-oxo DHEA enhances the activity of three thermogenic enzymes (glycerol-3-phosphate dehydrogenase, malic enzyme and fatty acyl CoA oxidase) and promotes the utilization of fat stores for energy.<sup>6,11-13</sup> Regarding the potential for aiding in fat loss, animal and *in vitro* studies show that 7-oxo-DHEA induces an increased proton leak through the mitochondrial inner membrane, which may contribute to an enhanced thermogenic effect.<sup>6</sup> This uncoupling of fat oxidation from ATP synthesis means that it may take more “calories” to produce the same amount of ATP, resulting in increased conversion of fuel substrates to energy. (The thyroid hormone thyroxine [T4] works by a similar mechanism. It induces uncoupling proteins and enhances activity of glycerol-3-phosphate dehydrogenase and malic enzyme, resulting in fatty acids being used preferentially for generating heat and less for ATP synthesis.)

Supplement Facts	
Serving Size 1 capsule	
Amount Per Serving	% Daily Value
3-Acetyl-7-oxo-dehydroepiandrosterone 100 mg * (7-Keto®)	
*Daily Value not established.	

**Other Ingredients:** Microcrystalline cellulose, cellulose (capsule), sunflower lecithin, silicon dioxide, vegetable stearate.

### Recommended Use:

- As a dietary supplement, take one capsule twice per day, or as directed by your health care practitioner.
- The sunflower lecithin in 7-keto® gives the compound enhanced bioavailability. This product may be taken on an empty stomach first thing in the morning before breakfast and again 12 hours later, regardless of meal times.

### Note:

- As of January 2019, the World Anti-Doping Agency lists 7-keto-DHEA as a banned substance under the category of metabolites of exogenously administered anabolic androgenic steroids. Use caution if considering using 7-Keto® in athletes who may be subject to testing for banned substances.<sup>14</sup>

*For a list of references cited in this document, please visit:*

[http://catalog.designsforhealth.com/assets/itemresources/7\\_Keto\\_References.pdf](http://catalog.designsforhealth.com/assets/itemresources/7_Keto_References.pdf)

\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

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