



LEANLUX™

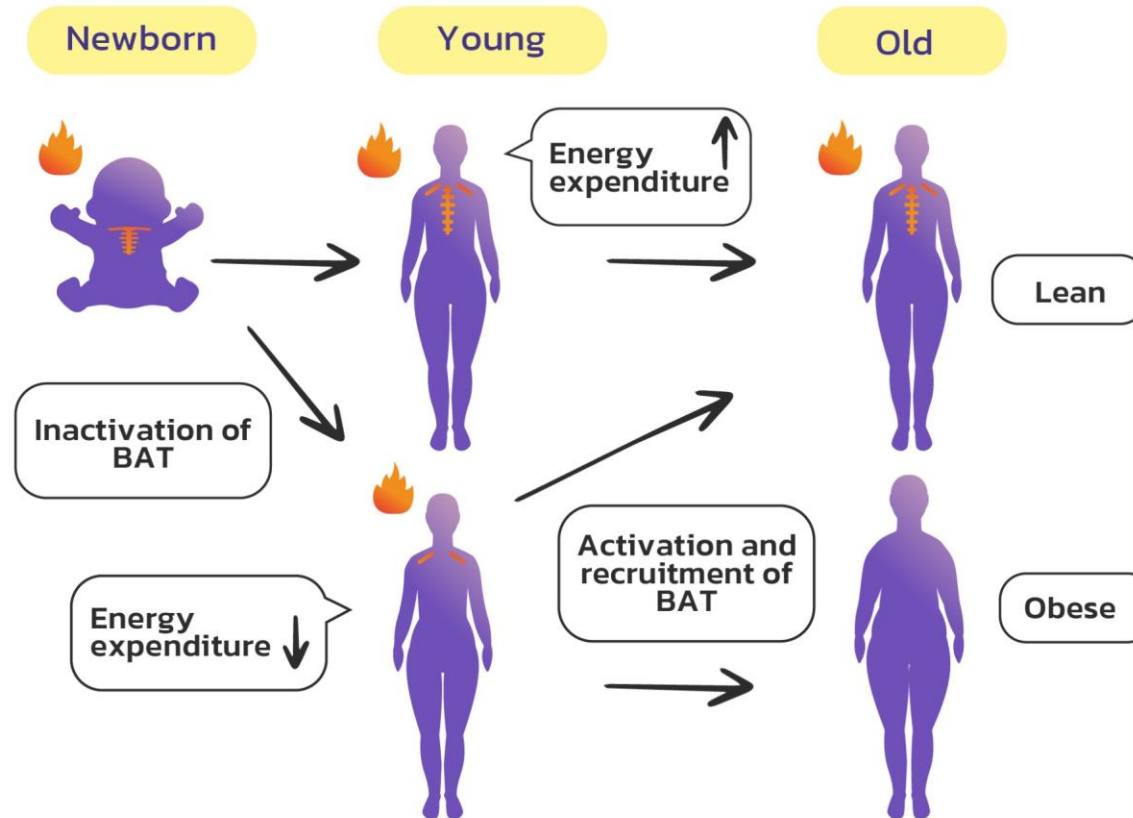
Advanced Cellular Lipid
Metabolism Enhancer



NanoSheath® Quercetin • Green tea extract • L-phenylalanine
Cactus extract • Citrus aurantium L. extract



The Mechanism of Obesity



Current Obesity Statistics

In 2023, **48.35% of Thai individuals** are classified as overweight or obese.



Overweight children and teenagers are five times more likely to carry obesity into adulthood which highlights the critical need for early health interventions and awareness

Obesity Statistics in 2023



Recent data reveals that 1.9 thousand million people are currently overweight globally, highlighting a growing public health concern.





Innovation Chem Co., Ltd.

Natural Ingredients



NanoSheath® Quercetin • Green tea extract • L-phenylalanine
Cactus extract • Citrus aurantium L. extract



Green tea extract

Key Benefits for Weight Management and Fat Reduction

01

Appetite Suppression

Green tea extract stimulates the release of **key appetite-regulating hormones**,

- **Peptide YY:**
Promotes a feeling of fullness.
- **Cholecystokinin (CCK):**
Signals satiety to reduce food intake.
- **Glucagon-like peptide (GLP-1):**
Slows digestion and reduces hunger

02

Boosts Thermogenesis

Green tea extract enhances **thermogenesis**, the body's fat-burning process.

- Accelerates the breakdown of excess fat.
- Aids in reducing body weight, especially **belly fat**.

03

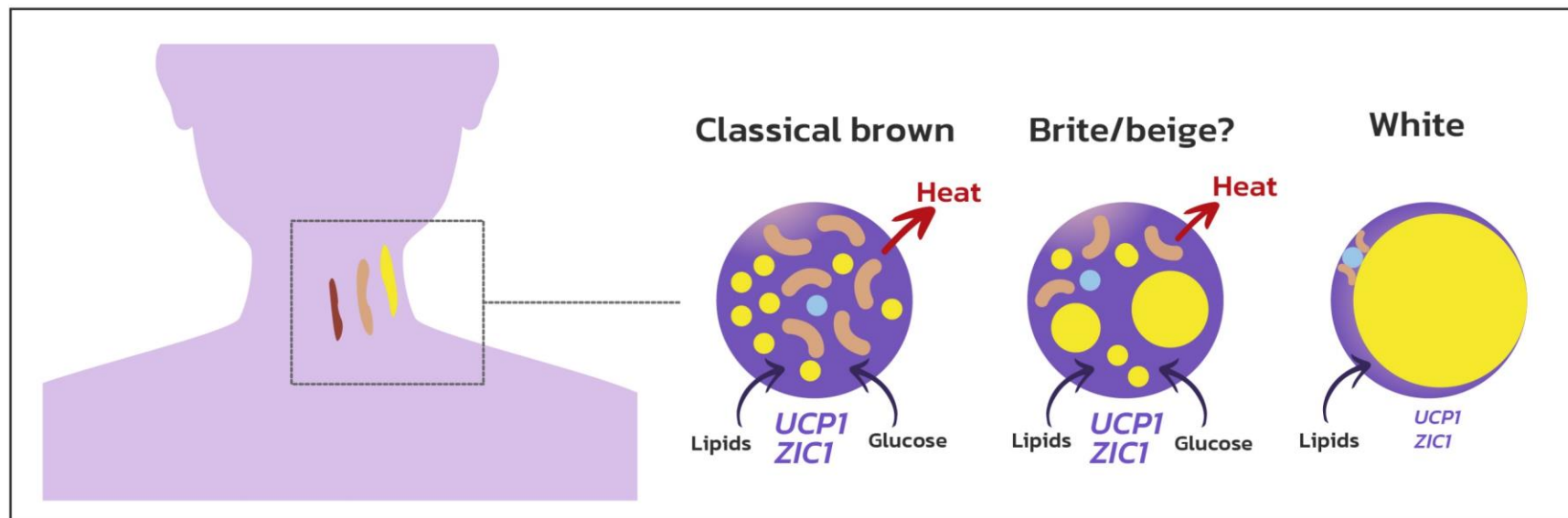
Inhibits Fat Oxidation

Green tea extract reduces fat absorption by:

- **Inhibiting lipase enzymes** responsible for breaking down fat. Slowing fat breakdown, resulting in **less fat being absorbed** into the body.



Body Fat



Brown Fat

- **Burns energy** by converting white fat into **heat**.
- Contains a special protein called **UCP1**, which stimulates fat burning.
- Activated by **exercise** and exposure to **cold temperatures**.

Key Point: Brown fat helps reduce fat storage and burns calories efficiently.

White Fat

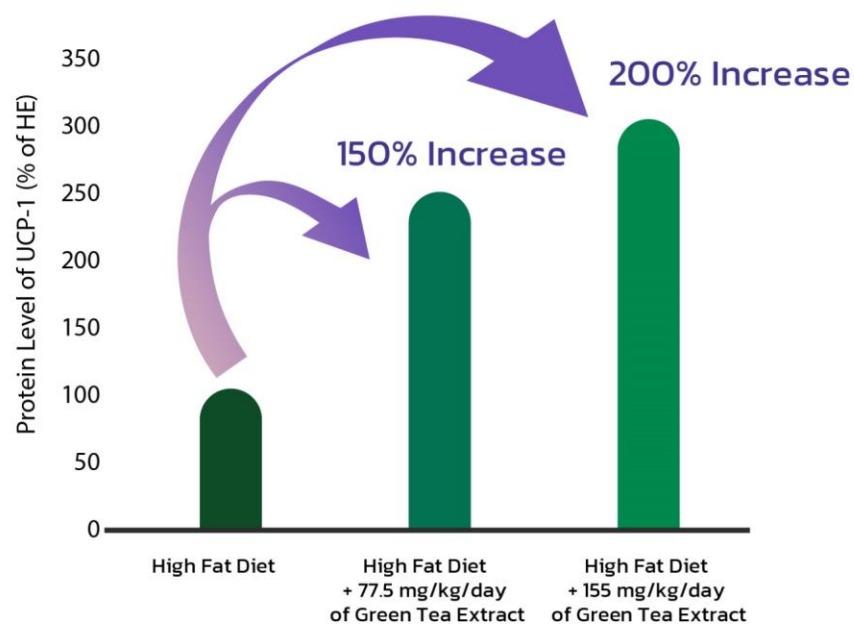
- **Stores energy** as fat reserves in the body.
- Commonly found in areas like the **belly, thighs, and arms**.
- Excess white fat can lead to **weight gain** and health issues.

Key Point: White fat serves as energy storage but too much can negatively impact your health.



Green tea extract

Effect of Green Tea Extract on UCP1 Levels



*UCP1 is protein primarily found in brown adipose tissue (BAT)

In this experiment, rats were divided into groups of 10 and were tested in the following conditions for 8 weeks.

- High-fat diet (Control)
- High-fat diet + 77.5 mg/kg/day Green Tea Extract
- High-fat diet + 1555 mg/kg/day Green Tea Extract

The results shown that green tea extract increased UCP1 levels in brown adipose tissue (BAT) where UCP1 is a thermogenic protein enhancing energy expenditure.

Green tea extract activates brown adipose tissue; therefore, boosting body metabolism.



Cactus Extract



The Power of Prickly Pear Extract

Overview

Prickly pear extract is rich in insoluble fiber, which gives it special properties to bind fats within the digestive tract. This process prevents fat absorption in the small intestine and helps eliminate it from the body, making you feel full longer and less hungry.

Key Benefits

Enhances Dietary Fiber Intake

- Improves **digestive efficiency** and promotes **healthy bowel movements**.

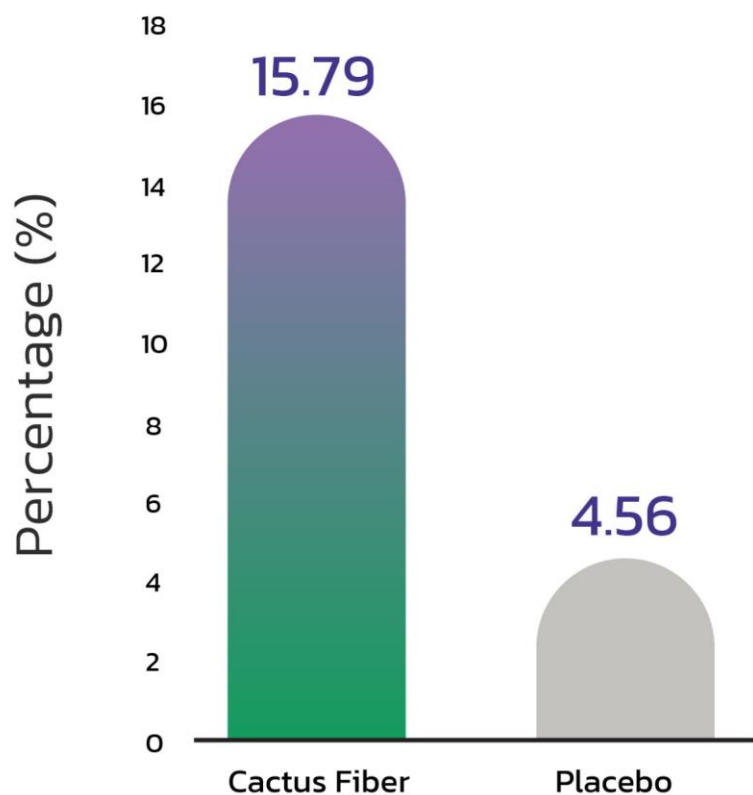
Reduces the accumulation of waste in the body.

Regulates Blood Sugar Levels

- The **soluble fiber** content helps stabilize blood sugar, maintaining normal levels.
- Prevents sudden spikes in blood sugar, which can lead to excessive glucose absorption into the bloodstream.



Cactus Extract



Cactus Extract

The Effectiveness of Cactus Extract in Fat Absorption

A study involving participants consuming a standardized diet with 35% fat intake revealed significant results regarding fat absorption.

Fat Excretion Levels

- Participants consuming **cactus extract** exhibited **15.79%** fat excretion.
- The placebo group showed only **4.56%** fat excretion.

This demonstrates that **cactus extract** significantly increases fat elimination compared to the placebo.

Cactus extract contains fibers that **bind to dietary fat** during digestion, reducing fat absorption.

This process aids in **eliminating fats through the digestive system** while improving bowel function and efficiency.





Citrus aurantium L. extract

Enhancing Thermogenesis & Fat Metabolism

- **Boosting Thermogenesis**

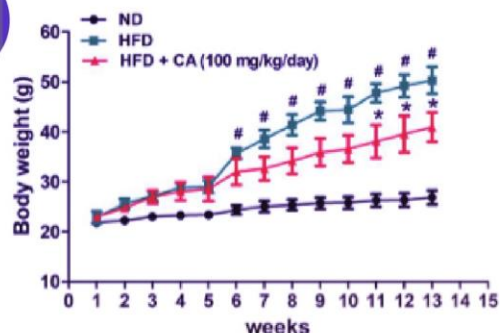
Citrus aurantium extract helps increase thermogenesis, stimulating the body's calorie-burning process.

- **Supporting Fat Metabolism**

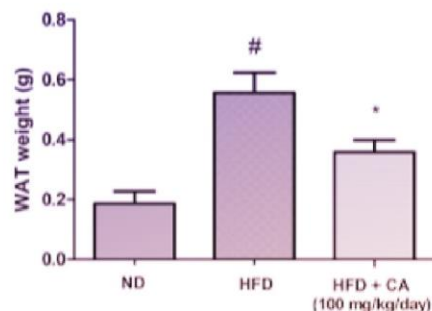
It influences fat metabolism by promoting lipolysis and helping reduce fat accumulation, supporting overall fat management.



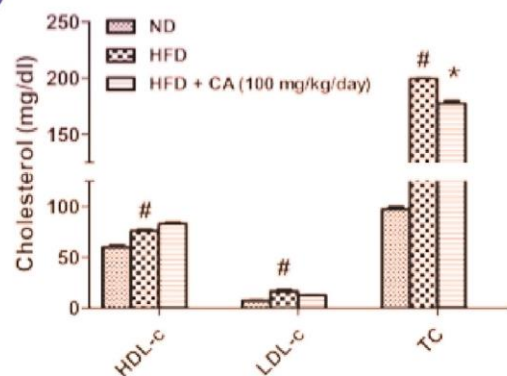
A



B



C



Effects of Citrus Aurantium Extract on Mice Fed a High-Fat Diet

*Study Design (8-week Duration):

Mice were divided into three groups:

- **Control Group:** Standard diet
- **High-Fat Diet (HFD) Group:** Fed a high-fat diet without supplementation
- **High-Fat Diet with Citrus Aurantium Extract (HFD + CA) Group:** High-fat diet supplemented with 100mg/kg/day Citrus Aurantium Extract

Key Observations & Results:

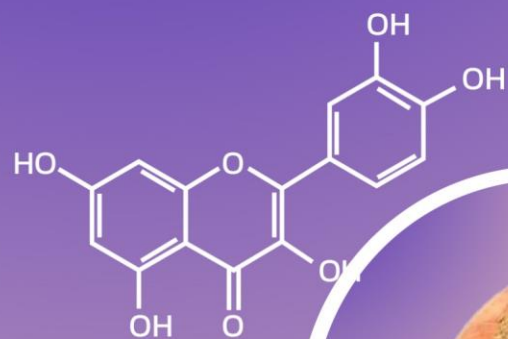
In the HFD + CA group when compared to HFD group alone, it was found that in the HFD+CA group had

- **Reduced Body Weight**
- **Lower White Adipose Tissue Weight**
- **Decreased Cholesterol Levels**

Citrus Aurantium Extract appears to influence fat metabolism and lipid profiles in mice.



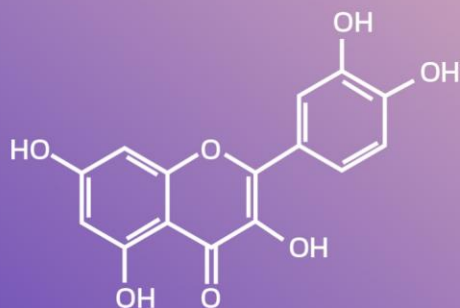
Onion Extract and Quercetin



- Active Ingredient: Quercetin
- Effects of Quercetin:
 - Reduces the growth of fat tissue
 - Decreases body fat accumulation
 - May promote the activity of brown fat cells
 - May reduce the rate of body weight gain



Quercetin

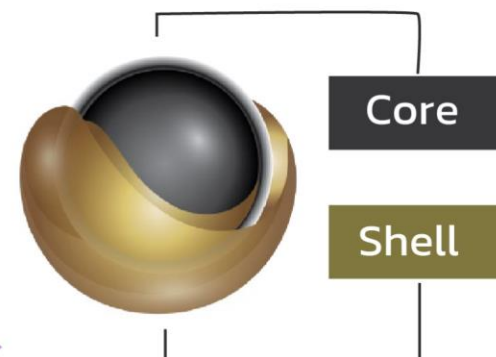


- Low solubility in water
- Low stability
- Poor environmental stability
- Low bioavailability
(poor absorption in the body)



Encapsulation

Encapsulated Quercetin



- Improved water solubility
- Enhanced stability
- Better environmental stability
- Increased bioavailability
(improved absorption)

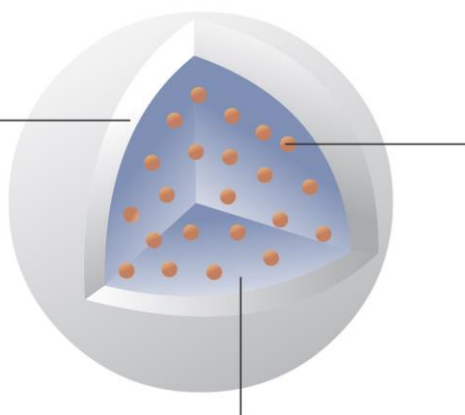
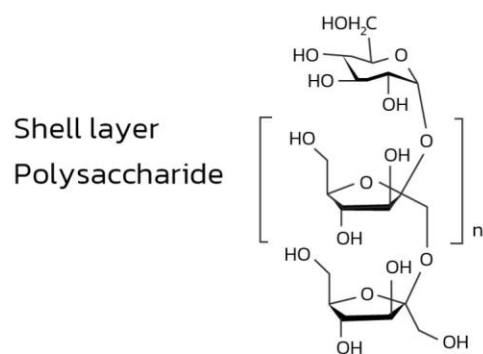


Advanced Encapsulation Technology for Quercetin under the Trademark

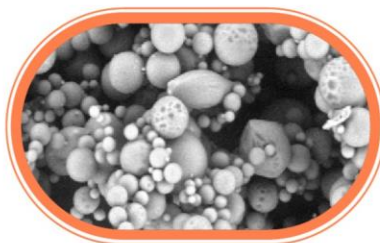


NANOSHEATH[®] QUERCETIN

An Innovative Encapsulation Technology



Particle size:
50-200 nm



- Utilizes proprietary methods to encapsulate quercetin for enhanced performance and stability.
- Protects the active compound from degradation and improves its bioavailability.
- Better solubility in water than quercetin alone
- The body can fully utilize the active ingredient more effectively

Encapsulation
Efficiency **90%**



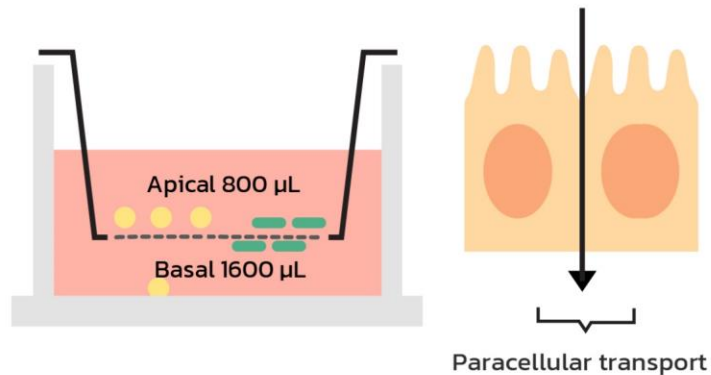
Awards

Gold Medal WorldInvent
Singapore 22+23



Absorption of EGCG from Green Tea Extract

with Nanosheath® Quercetin in Simulated
Intestinal System



Study Setup:

- **Tested Compound:** EGCG from green tea extract
- **Comparison:** EGCG with Nanosheath® Quercetin vs. EGCG with regular quercetin

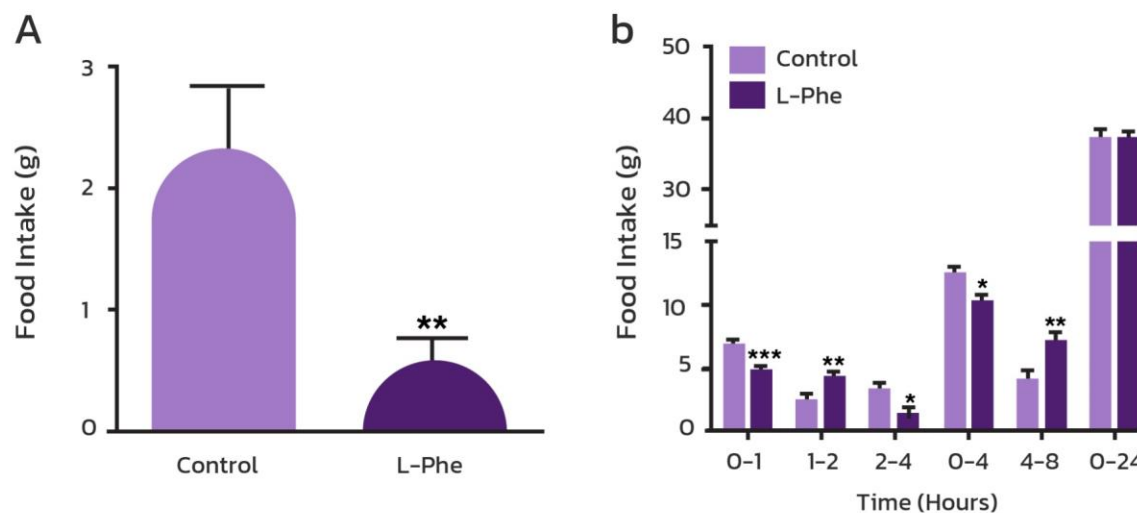
Results:

- After 4 hours, **EGCG absorption** was significantly higher when combined with **Nanosheath® Quercetin** compared to **regular quercetin**.

Sample	EGCG concentration (µM)
EGCG	0.279
EGCG + Quercetin	0.261
EGCG + NanoSheath® Quercetin	0.407



Effects of L-Phenylalanine on Food Intake and Body Weight in Rats



Rats were tested for food intake at intervals of 1, 2, 4, 8, and 24 hours after L-Phenylalanine intake.

- L-Phenylalanine significantly reduced food intake.
- L-Phenylalanine also resulted in a reduction in body weight

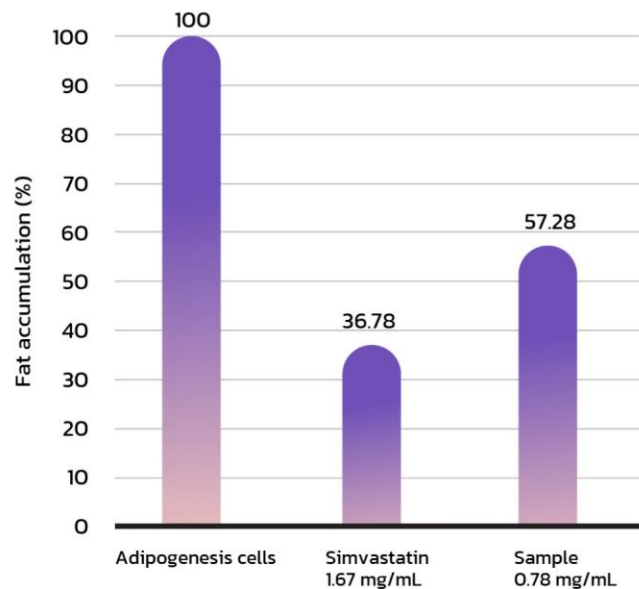


Results of In Vitro Testing with LeanLux™

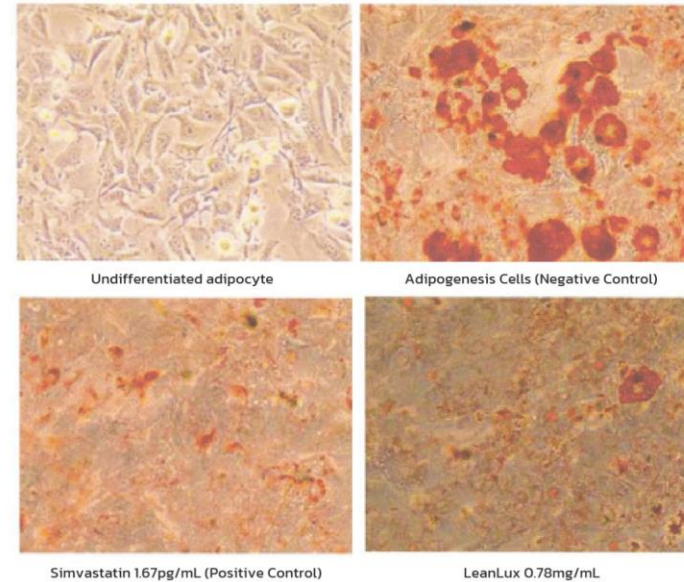


3T3-L1 fat cells treated for 10 days with

- 0.78 mg/mL of LeanLux™
- 1.67 µg/mL of Simvastatin (Positive Control)
- No treatment = Adipogenesis Cells (Negative Control)



Cells treated with LeanLux™ showed a **43.72% inhibition rate of fat accumulation**, highlighting its ability to reduce fat storage in 3T3-L1 mature adipocytes.



The appearance of 3T3-L1 mature adipocytes stained with Oil Red O after treatment with LeanLux™ was observed under an inverted microscope (x40).





LeanLux™ Supplementation

75-Day Study Results



Participants: 15 individuals (10 females, 5 males)

Supplementation: LeanLux™ taken immediately after meals for 75 days.

Initial Findings:

- All participants reported increased hunger at the start, indicating a higher metabolic rate and energy expenditure.

Key Observations After 1–2 Weeks:

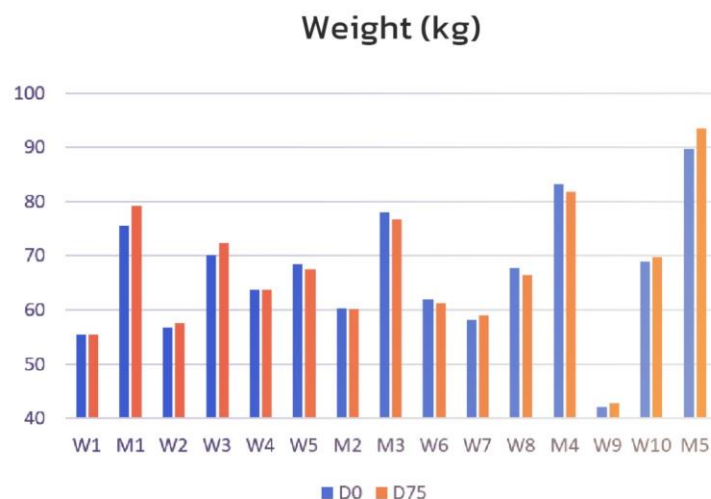
- Reduced snack cravings.
- Participants felt fuller faster during meals compared to before



LeanLux™ Supplementation

75-Day Weight Loss Results

- **Participants:** 15 individuals (10 females, 5 males).
- **Duration:** 75 days of LeanLux™ supplementation.



- **7 Participants** experienced weight loss (4 females, 3 males).
- **4 Participants** showed **significant weight loss**.
- **Note:** Individual weight loss results varied

	Weight Decrease (kg)	Weight Decrease (%)
M3	1.4	1.79%
W5	1.1	1.61%
W8	1.3	1.92%
M4	1.5	1.80%

- **4 Participants** showed **significant weight loss**

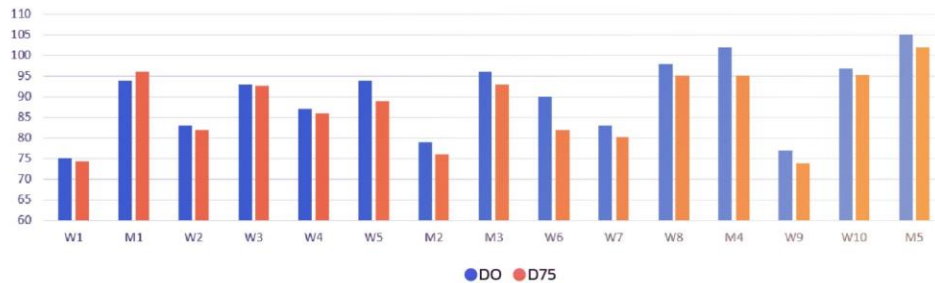




LeanLux™ Supplementation

75-Day Results on Waist Size and Triglycerides

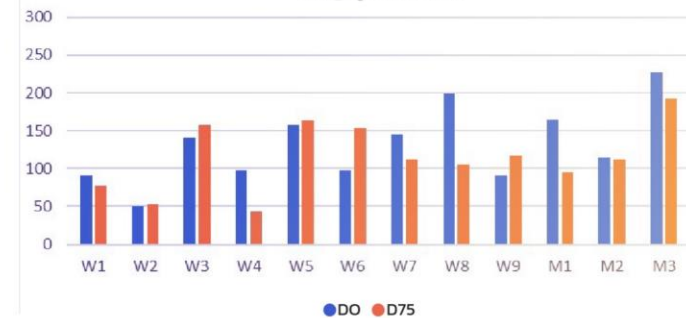
Waist Circumference (cm)



Waist Circumference

More than 90% of participants experienced a significant reduction.

Triglycerides



Triglycerides

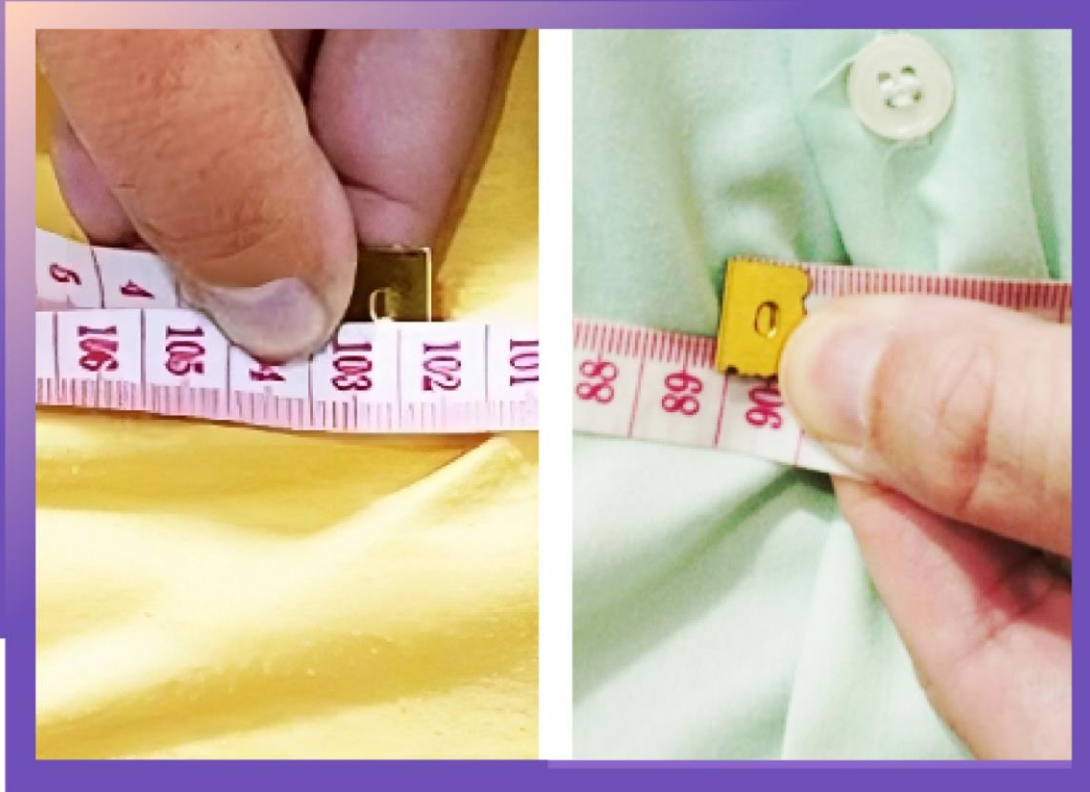
7 out of 12 participants showed a noticeable decrease in triglyceride levels.



Conclusion

- No clear weight loss trend due to uncontrolled factors like food intake, muscle mass, and water consumption.
- However, a **reduction in waist circumference** was evident in the majority (90%) of participants.





Before

After

Reduction in Waist Circumference After

5 Weeks of LeanLux™
Supplementation





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