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### ***Primary Hormones That Govern Hunger & Satiety***

Below are the primary hormones (5–8) that regulate hunger and satiety, along with their core functions and where they're produced.

#### **Top Hunger & Satiety Hormones**

##### **1) Ghrelin — “The Hunger Hormone”**

- **Primary role:** Triggers hunger
- **Produced by:** Stomach (especially when empty)
- **Effect:** Signals the brain to increase appetite and food seeking
- **Pattern:** Rises before meals, falls after eating

##### **2) Leptin — “The Satiety Hormone”**

- **Primary role:** Long-term regulation of body fat and fullness
- **Produced by:** Adipose (fat) tissue
- **Effect:** Suppresses appetite, increases energy expenditure
- **Notes:** Leptin resistance is common in obesity, reducing its effectiveness

##### **3) Insulin**

- **Primary role:** Regulates blood glucose, also affects satiety
- **Produced by:** Pancreas ( $\beta$ -cells)
- **Effect:** Signals to the brain that nutrients are available → reduces appetite
- **Notes:** Chronic high insulin (hyperinsulinemia) can alter appetite signaling

##### **4) Cholecystokinin (CCK)**

- **Primary role:** Short-term satiety during meals
- **Produced by:** Small intestine

- **Effect:** Reduces eating by slowing gastric emptying + stimulating vagus nerve
- **Triggered by:** Fats and proteins in food

### 5) Peptide YY (PYY)

- **Primary role:** Short- to medium-term appetite suppression
- **Produced by:** Ileum & colon
- **Effect:** Signals fullness after eating; slows digestion
- **Notes:** Often lower in individuals with obesity

### 6) GLP-1 (Glucagon-Like Peptide-1)

- **Primary role:** Satiety + blood sugar regulation
- **Produced by:** Small intestine
- **Effect:** Strong appetite reduction, slows gastric emptying, increases insulin
- **Notes:** Basis for GLP-1 agonist medications (e.g., semaglutide)

### 7) Neuropeptide Y (NPY)

- **Primary role:** Strong hunger stimulation
- **Produced by:** Hypothalamus
- **Effect:** Increases appetite, especially for carbs
- **Triggered by:** Fasting, stress, low leptin

### 8) AgRP (Agouti-Related Peptide)

- **Primary role:** Potent appetite stimulation
- **Produced by:** Hypothalamus
- **Effect:** Increases food intake; works with NPY
- **Notes:** Counterbalances satiety signals

### Summary Table

Hormone	Hunger / Satiety	Primary Source	Main Effect
Ghrelin	Hunger ↑	Stomach	Increases appetite
NPY	Hunger ↑	Hypothalamus	Drives strong hunger
AgRP	Hunger ↑	Hypothalamus	Increases food intake

Leptin	Satiety ↑	Fat tissue	Long-term suppression
Insulin	Satiety ↑	Pancreas	Reduces appetite, glucose control
CCK	Satiety ↑	Small intestine	Meal-related fullness
PYY	Satiety ↑	Gut (ileum/colon)	Fullness after meals
GLP-1	Satiety ↑	Small intestine	Appetite suppression, slows digestion