

Sweating



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What is sweating?



Sweating is also known as perspiration

- Release of water from the skin (insensible)
- Release of secretions from sweat glands (sensible)
 - Works through apocrine and eccrine glands

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Sweat Composition



Sweat = Water + Salt (NaCl)



Apocrine Secretions

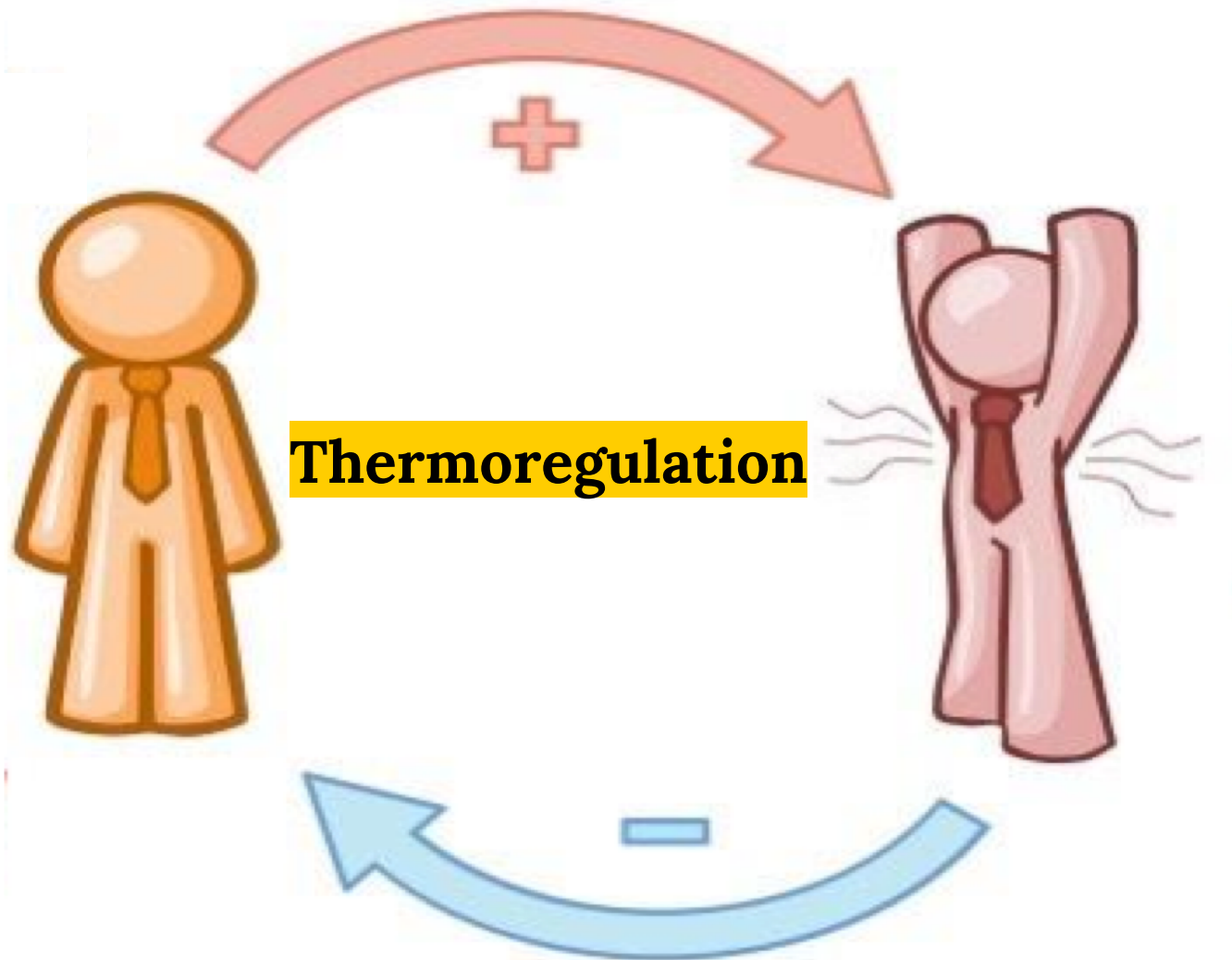
- Turbid, milky
- Viscous, oily
- Proteins, lipids, steroids

Eccrine Secretions

- Dilute, colourless
- 99% water
- High concentration of NaCl

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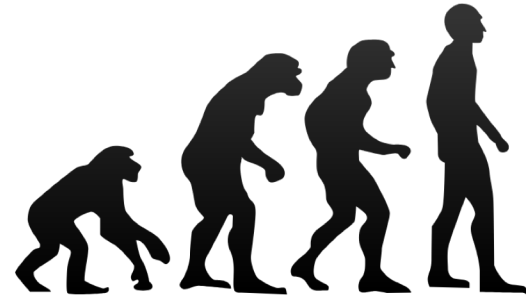
Why do we sweat?



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Evolution of Sweating

Evolution of Sweating



**Apocrine
System**

**Eccrine
System**

Slow moving, thick fur
coating

Bipedal, hairless

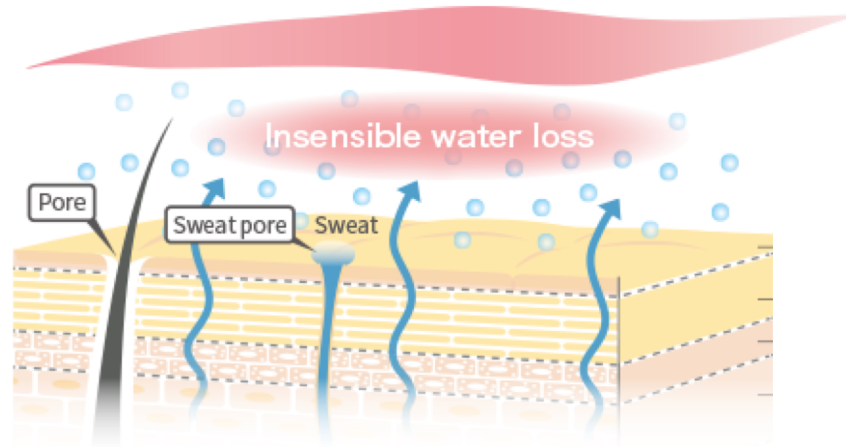
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Types of Sweating



1. Diffusion

- Occurs at all times
- Aka insensible perspiration





2. Thermoregulatory

- ⦿ High temperature or exercise
- ⦿ Glands on skin surface
- ⦿ Up to 4 liters per hour of sweat
- ⦿ Reduces body temperature to maintain homeostasis

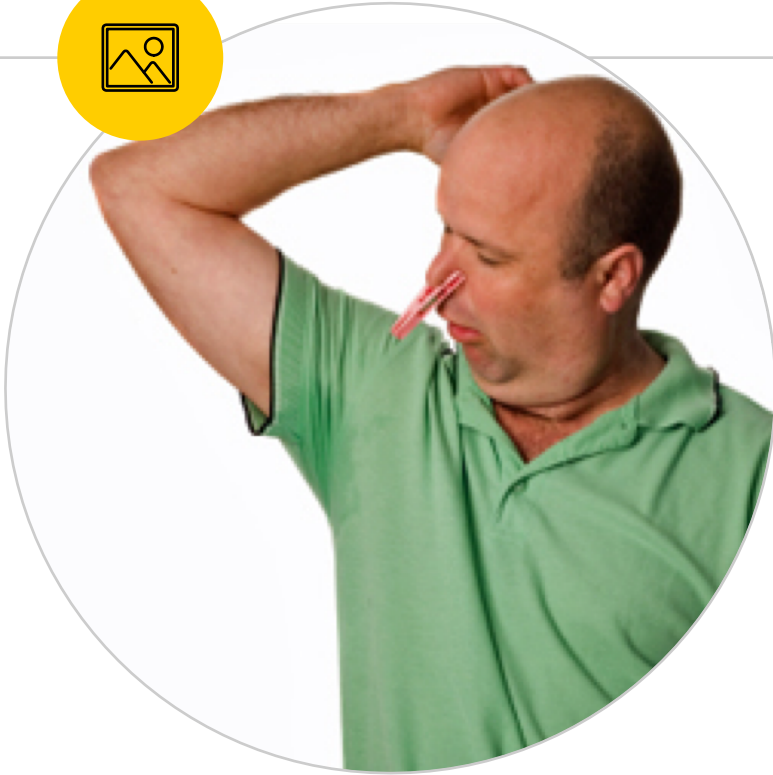




3. Emotional

- ◎ Stress, anxiety, fear, pain, anger, etc.
- ◎ Face, armpits, palms and soles of feet
- ◎ “Cold sweat”





Body Odour

- Occurs around the time of puberty
- Produced when apocrine secretions mix with bacteria on skin surface



4. Gustatory

- Sweat induced by food consumption
- Ingestion → ↑ metabolism → ↑ body temperature
- Sweating in face, scalp and neck areas



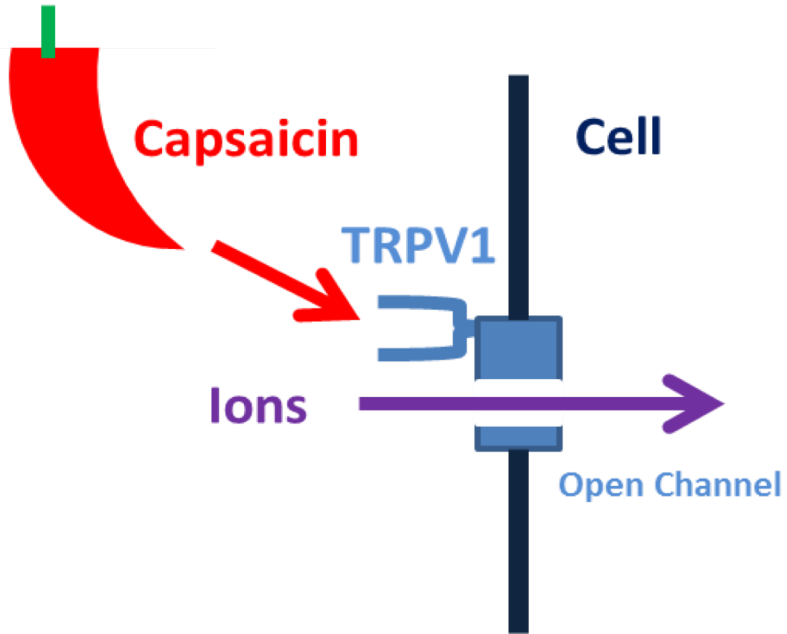


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Sweating due to Spicy Foods



Sweating due to Spicy Foods



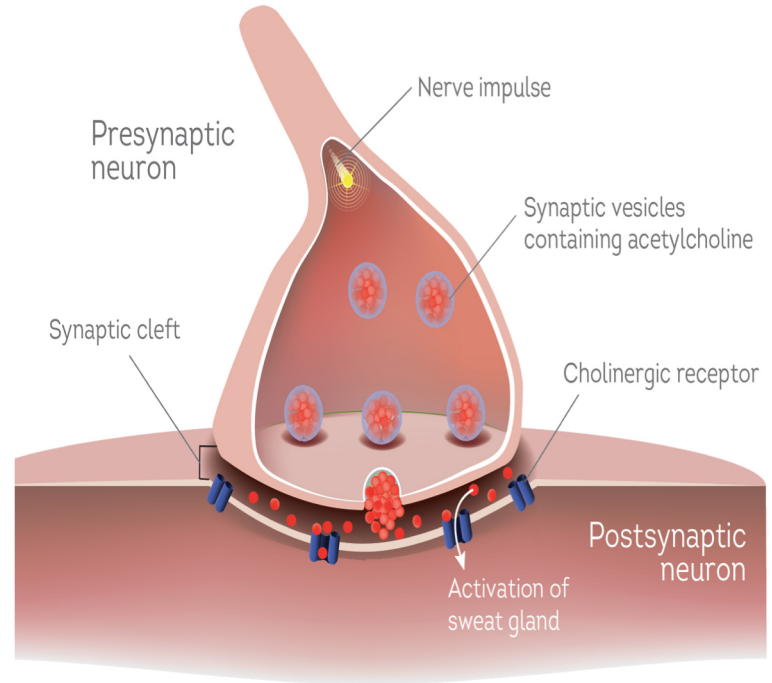
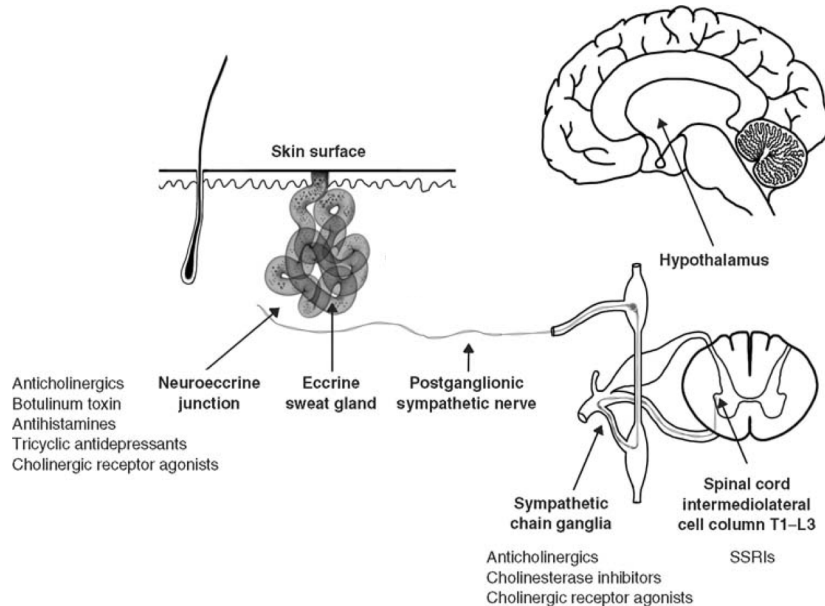
Why can some people tolerate spicy food more than others?

- Less sensitive receptors
- Repeated exposure leads to desensitization

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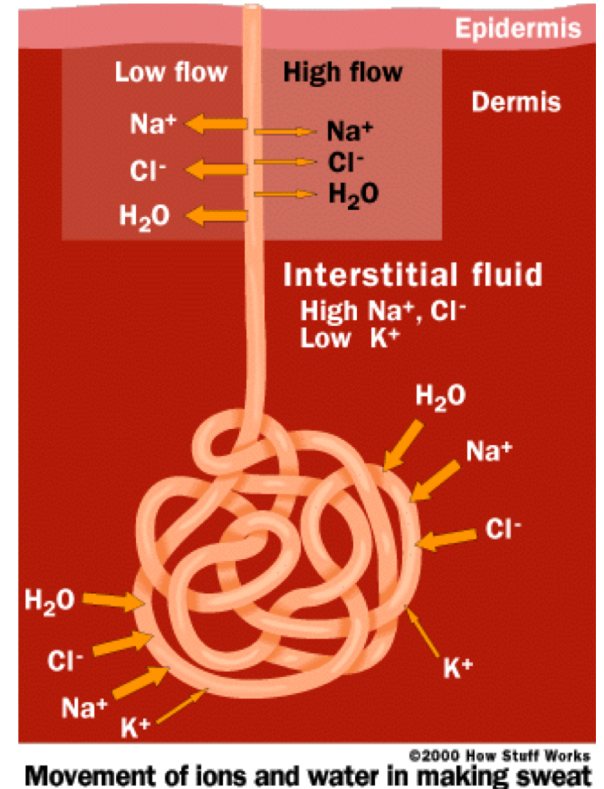
Mechanism of Sweating

Mechanism of Sweating



Mechanism of Sweating

- Sweat gland draws H₂O, Na⁺, Cl⁻ and K⁺ from plasma to make sweat
- **Low sweat rate** = high K⁺ and low Na⁺ and Cl⁻
- **High sweat rate** = low K⁺ and High Na⁺ and Cl⁻

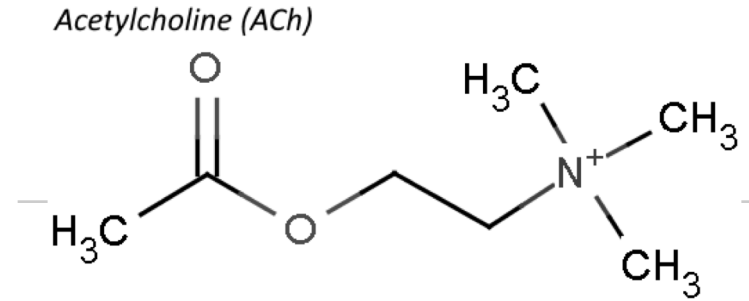


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Hormones



Hormones



- Cholinergic nerve stimulates eccrine glands to produce sweat
- Acetylcholine hormone (ACh)
- ACh functions in eccrine glands through receptor Chrm3
- Chrm3 blockers inhibit sweat secretion

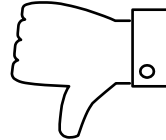
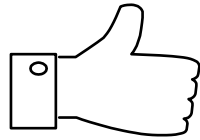
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Why do we become red?

● Why do we become red?



Why is sweating good and why can sweating be bad?





Pros of sweating

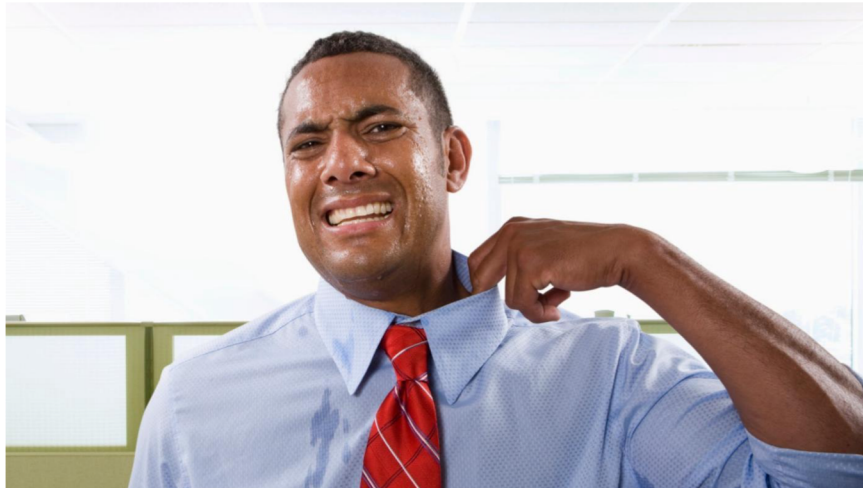
- Excretes toxic chemicals
- Releases feel-good hormones
- Lowers risk of kidney stones
- Defends against parasites



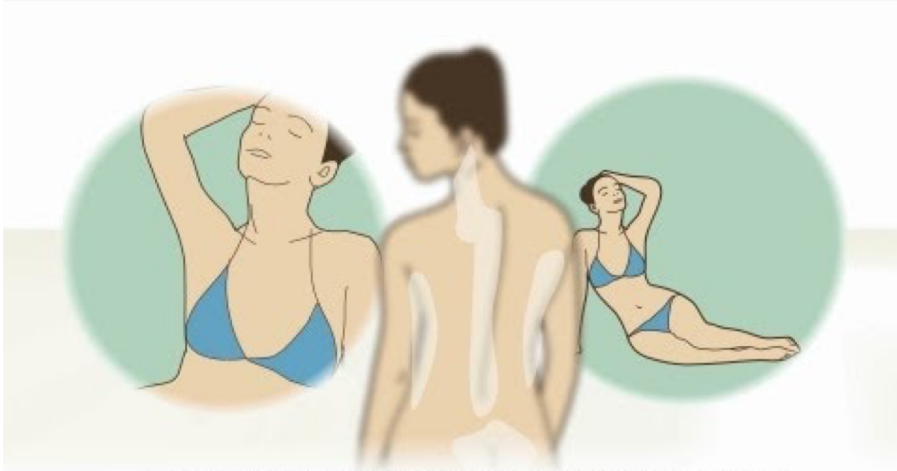
📌 **Cons of sweating**

Sweat-Related Diseases:

- 🟡 Primary focal hyperhidrosis
- 🟡 Secondary general hyperhidrosis



Hyperhidrosis



...such as armpits or generalized which involves the entire body.

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Treatments for Sweating

Treatments for Sweating



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Sweating in Animals

Sweating in Animals



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Test Questions

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 - a. Apocrine
 - b. Eccrine
 - c. Sebaceous
 - d. A and B



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