



Hesperidine

Hesperidin, a powerful flavonoid found in citrus fruits, has garnered significant attention for its potential therapeutic benefits, particularly in cardiovascular health.

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Structural Characteristics and Classification

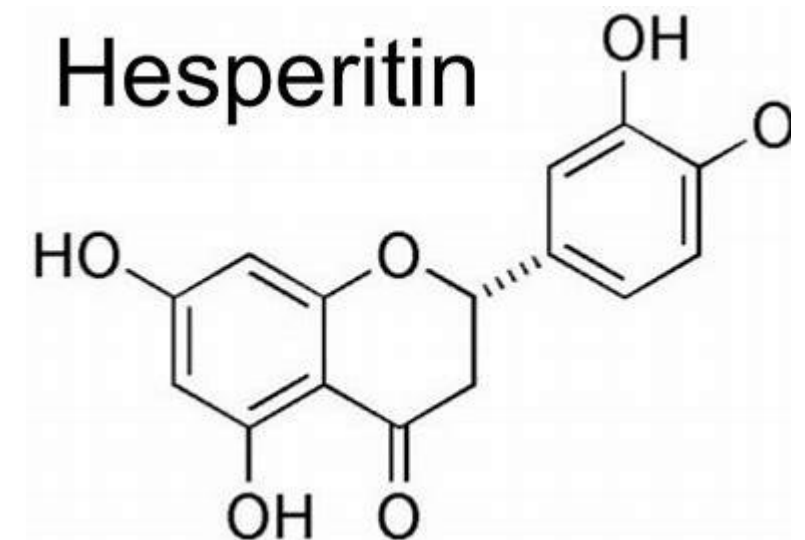
Structure

Hesperidin is a glycosylated flavanone, comprised of hesperetin (a **flavanone**) linked to a rhamnose and a glucose molecule. This unique structure contributes to its diverse biological activities.



Class

Hesperidin belongs to the flavonoid family, a group of polyphenols abundant in plants. It is specifically classified as a flavanone glycoside, distinguished by its structure and potential health benefits.



Pharmacological Activities: Focus on Vascular Health

1 Antioxidant

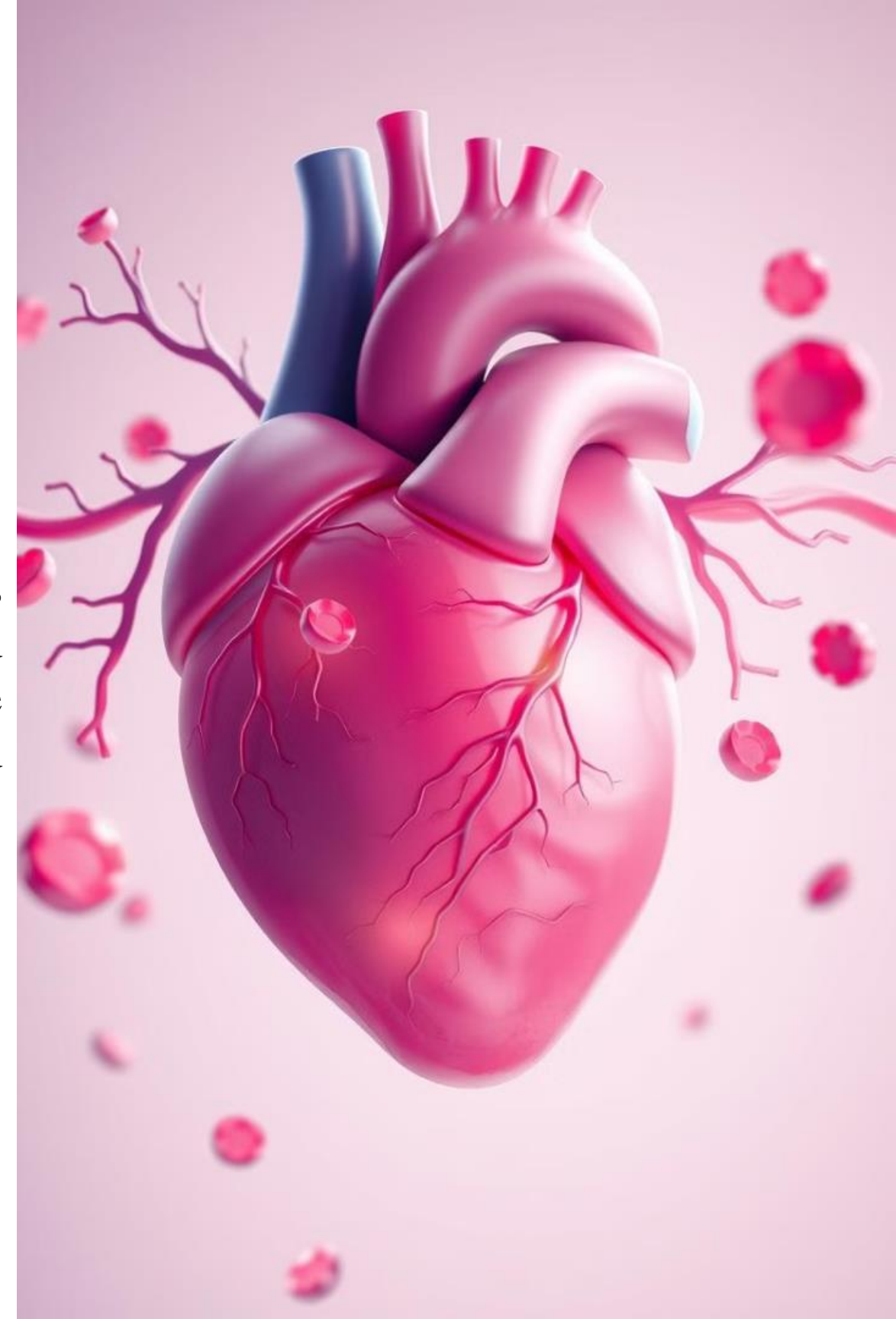
Hesperidin's antioxidant properties protect cells from damage caused by free radicals, contributing to overall cardiovascular health.

2 Anti-inflammatory

Hesperidin reduces inflammation in blood vessels, preventing damage and promoting healthy blood flow.

3 Vasoprotective

Hesperidin strengthens blood vessels and reduces permeability, contributing to healthy blood pressure and circulation.



Hesperidin Extraction and Purification Techniques



Solvent Extraction

Hesperidin can be extracted from citrus peel using various solvents, such as ethanol or methanol.

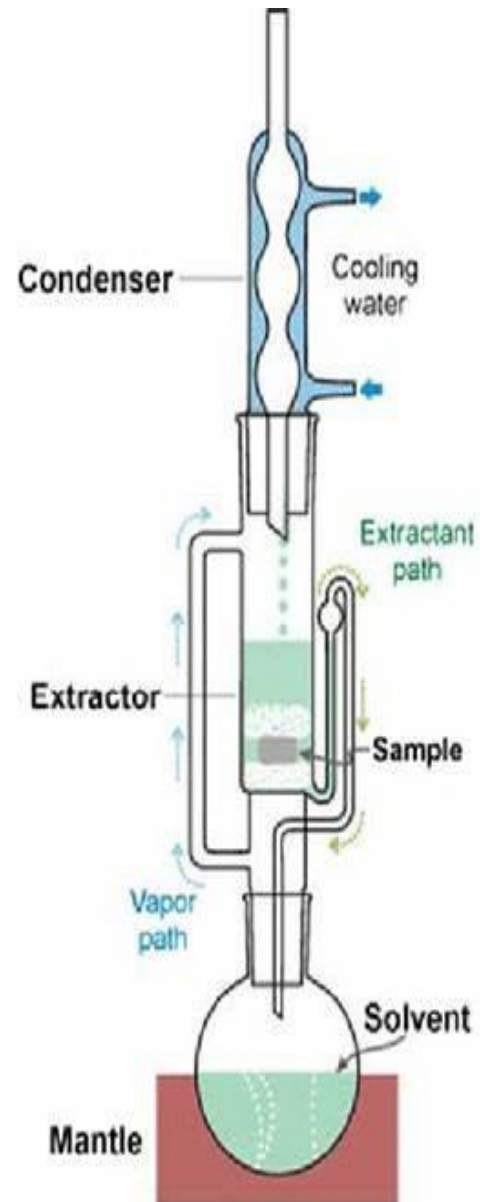


Chromatographic Techniques

Chromatographic methods, such as column chromatography, are used to purify hesperidin.



Solvent Extraction



1

50 g of orange peel with 200 ml 10% CaOH mix and left over night (in an alkaline medium, hesperidine forms a soluble salt, making extraction more efficient.)

2

Centrifuge and filtration then acidified with Conc. HCL

3

Amorphous powder of hesperidine

- Acidify the filtrate using dilute HCl or acetic acid until pH 3-4.
- Reason for adding HCl/acetic acid:
 - Hesperidin is poorly soluble in acidic conditions, leading to **precipitation**.
 - Removes excess calcium hydroxide by neutralizing it.



Phytochemical tests

1

NaOH

2

Lead acetate



