

Isolation of Piperin from Black pepper
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Black pepper (**King of spices**)

Black pepper is cultivated and harvested in tropical regions of Srilanka and India.

Scientific name : *Piper nigrum*

Common name : black pepper

Family: Piperaceae

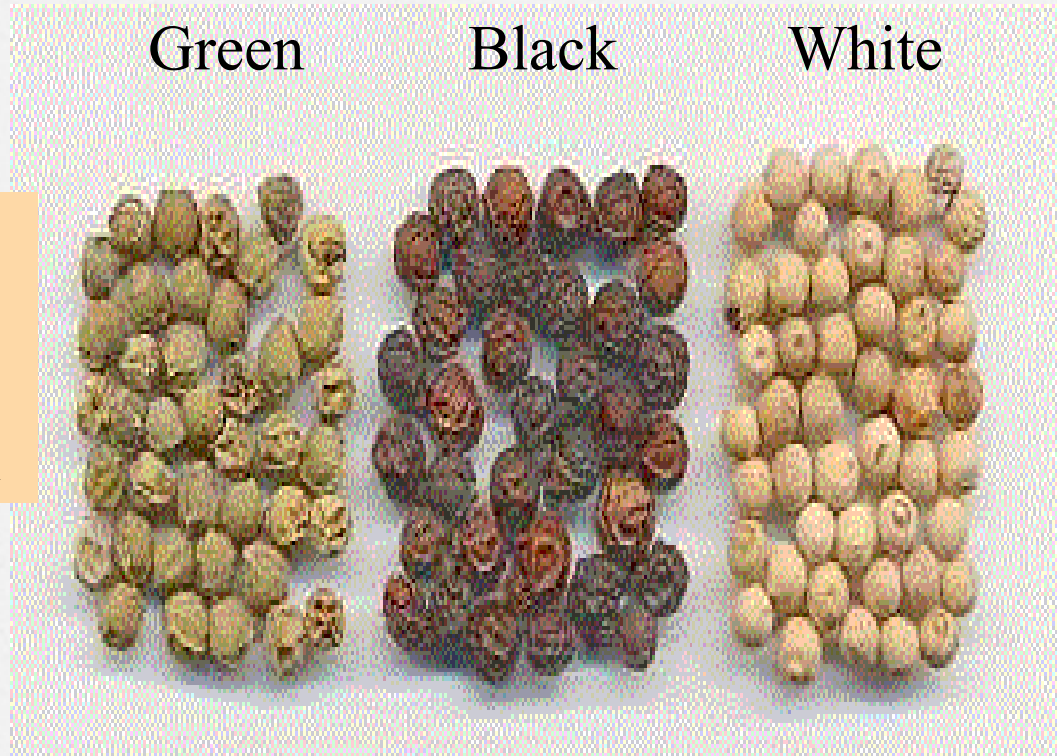
Black pepper is one of the most commonly consumed spice, and its pungency is due to the presence of an alkaloid known as piperine, volatile chemical constituents, and essential oils.

Climate

- Black pepper requires warm humid climate.
- It tolerates a minimum of 10°C and a maximum of 40°C .
- Ideal rang of humidity is 75-80%.

Peppers

Early harvest, quick drying to prevent fermentation



Outer layer removed by soaking the pepper for 1-week in running water. This reveals the white “

Piperine is found in black pepper, white pepper and long pepper belonging to the family Piperaceae.

However, certain reports suggest a higher content of piperine up to 9% in black pepper, and 4 -5 % in long pepper

Medicinal and pharmaceutical uses :

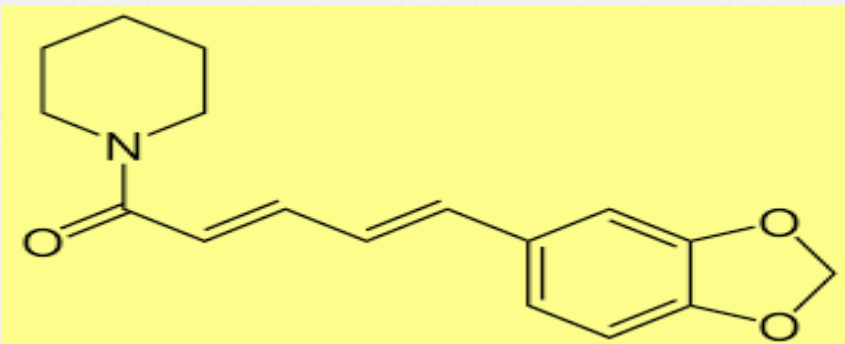
- Digestive and immune stimulant
- anti-oxidant
- anti-inflammatory
- anti-cancer activities.

Piperine has a significant effect on the drug metabolizing enzyme (**DME**) system and acts as bioavailability enhancer for many chemotherapeutic agents.

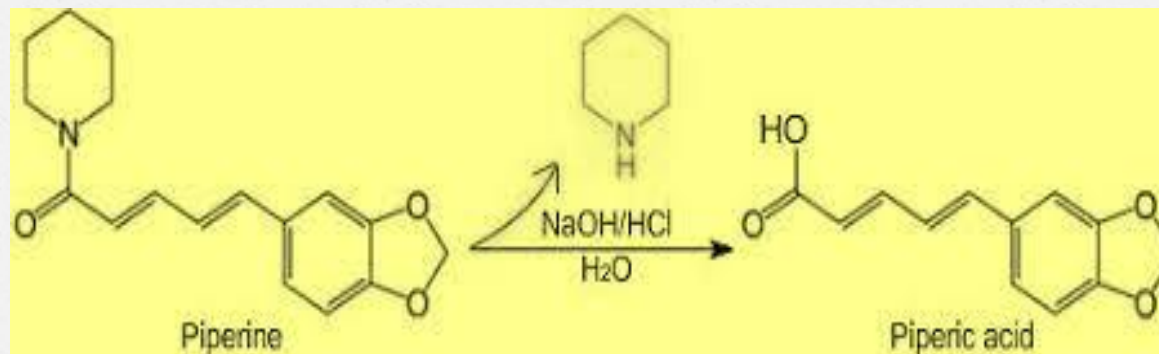


Characteristics

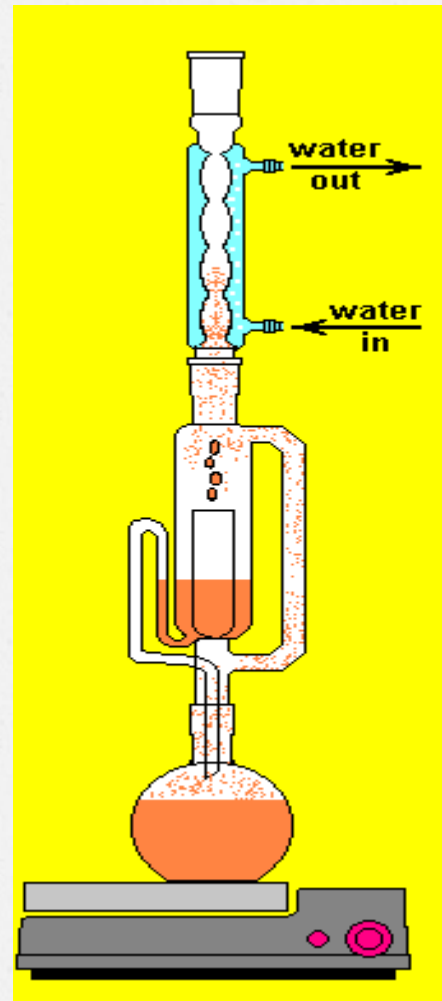
- Piperine a yellow crystalline
- molecular formula : C₁₇ H₁₉NO₃
- M.P of 128 -130° C.



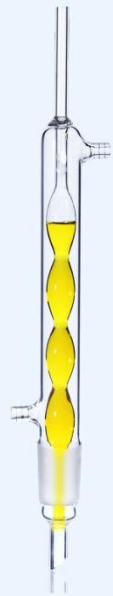
- Present in plant as **weak base**.
- **Slightly soluble in water and more soluble in alcohol, chloroform, and ether.**
- Piperine is weakly basic in nature, which on hydrolysis (acidic/basic), can be converted to piperic acid and piperidine



Soxhlet extraction method



Condenser



Main chamber



Tube



Round flask

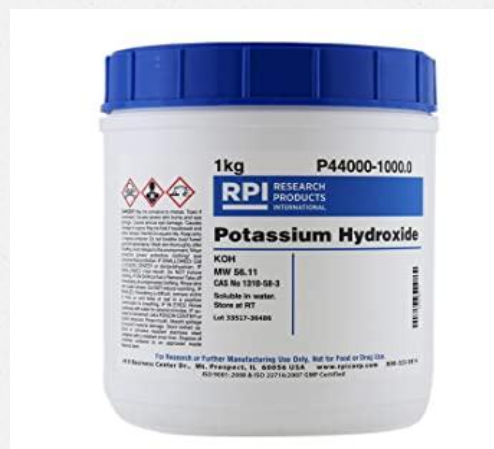


Procedure

1. Powdered black pepper (15gm) was extracted with 150 ml 95% ethanol using Soxhlet extractor for 2 to 3 hrs. The extract was concentrated on a water bath at 60° C.



2. Further, 10 ml of 10% alcoholic potassium hydroxide was added followed by continuous stirring (1-3min).



3. Filtrate and get rid The residue of insoluble material, then addition of water resulted in precipitation of alkaloid(piperine), the flask was kept overnight, and then filtered .



Analytical identification

Mayers reagent :: 1ml of extract + 1ml of reagent = **creamy ppt**

Dragendorff reagent :: 1ml of extract + 1ml of reagent = **orange - red ppt.**



