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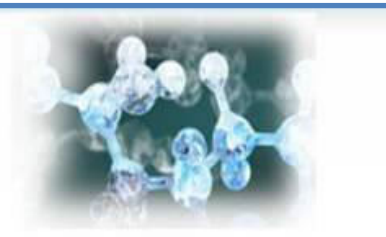
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# Research and Exploration of Sericultural Resources on Purpose of Edible and Medicinal Products

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***Journal of Medicinal Chemistry* editorial board member.**



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# Research Background (1)

## Traditional Sericulture

- ◆ Sericulture is a traditional and characteristic industry with 5000-year history in China ; Farmers plant mulberry trees and collect leaves to feed silkworms and make money on cocoons.
- ◆ China ranks first among countries with sericultural industry and over three quarters silk are from China in the world.
- ◆ Lots of sericultural resources including mulberry, mulberry stems, pupa, as well as extra mulberry leaves are wasted.



**Planting Mulberry  
Trees**



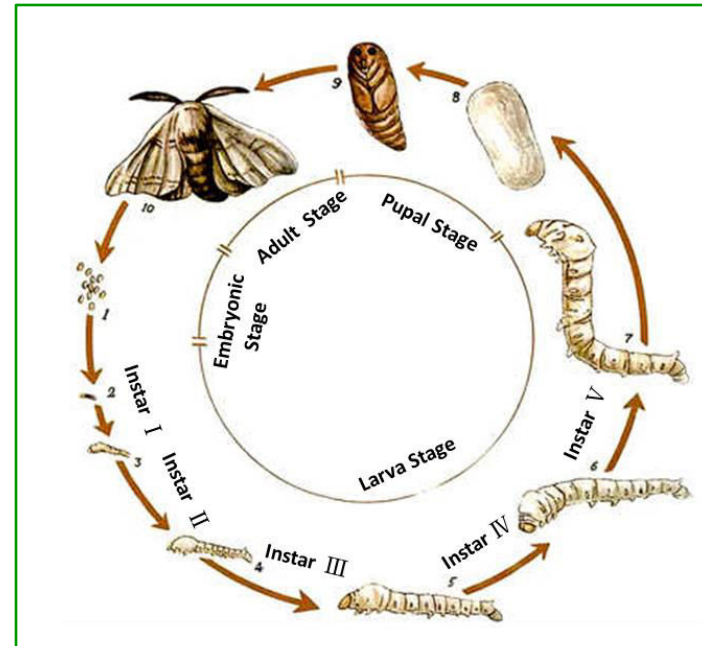
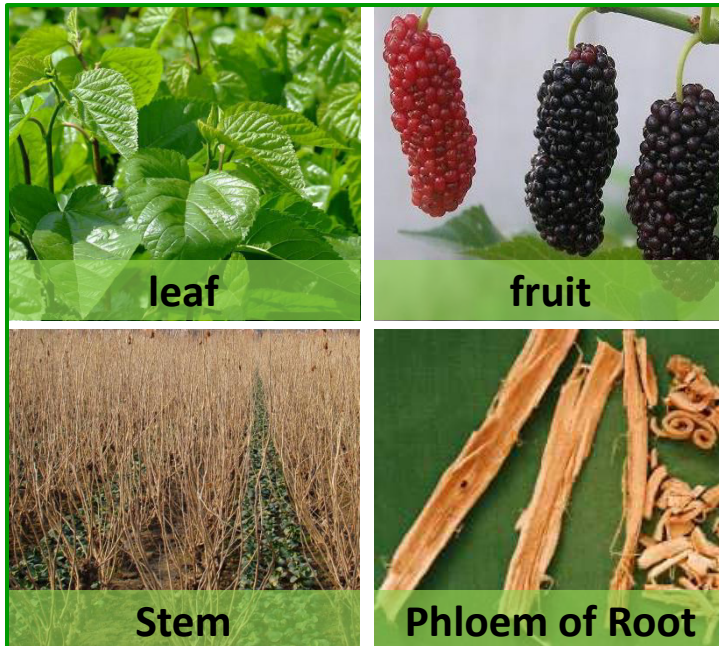
**Feeding Silkworms**



**Selling Cocoons**

# Research Background (2)

- ◆ Sericultural resources consist of mulberry leaves, fruits, stems, phloem of roots from mulberry trees, as well as eggs, larvae, pupae, cocoons and adults from silkworms. However, only mulberry leaves are used for cocoons production.
- ◆ All the sericultural resources are beneficial products for human health in consideration of nutritional and bioactive constituents.
- ◆ There is a close relationship between mulberry and silkworm resources, because silkworms are oligophagous insects and exclusively eat mulberry leaves in the larval stage.



# Research Background (3)

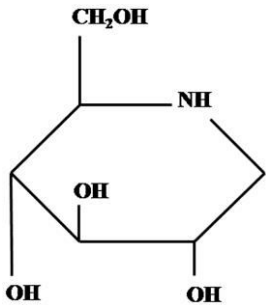
Specially mulberry leaf, fruit, pupa and moth are by-products and they mean worthless compared to cocoons in traditional sericultural industry. Research and exploration of sericultural resources including mulberry leaf, fruit, pupa and moth on purpose of edible and medicinal products are becoming hotspots due to their potential healthy promotion effects reported by scientist over the last few decades.

- ◆ **Mulberry leaf:** Rich in nutrients like protein, essential amino acids, Vit A, E, B1 and B2, calcium, iron, potassium zinc ect. And bioactive phytochemicals like polysaccharides, phenolics, polyhydroxylated piperidine alkaloids etc.
- ◆ **Fruit:** Be classified as berries, rich in nutrients Vit C, fructose, calcium, iron etc. And bioactive phytochemicals like anthocyanins, polysaccharides, phenolics, polyhydroxylated piperidine alkaloids etc.

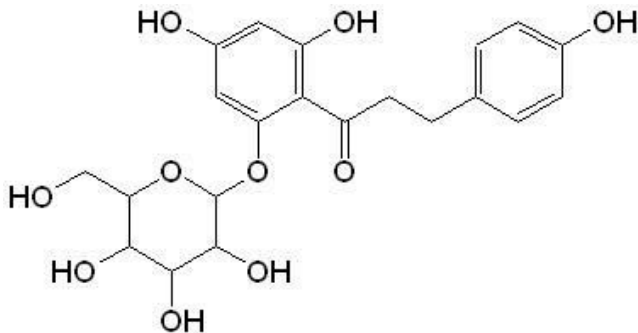
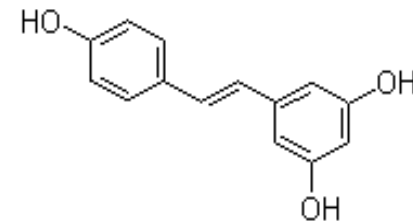
- ◆ **Pupa:** Resources of protein, fat, essential amino acid, n-3 polyunsaturated fat, Vit A, B2 and D,  $\beta$ -carotene, ergosterol etc.
- ◆ **Moth:** Rich in protein, unsaturated fat, Vit B12, selenium, cytochrome C, phospholipids, juvenile hormone, and ecdysone etc.

# Research Background (4)

Several characteristic phytochemicals with bioactivities found in sericultural resources.



**1-Deoxynojirmycin.** The most important constituent found in leaf, fruit, stem, root phloem, egg, larva, pupa and moth, and is demonstrated with antidiabetic, antiviral and antiobesity effects etc.



**Cyanidin 3-O-glucoside.** The most abundant anthocyanin individual in mulberry. It is a well-known antioxidant, anti-inflammatory, antiatherosclerotic and antiobesity effects etc.



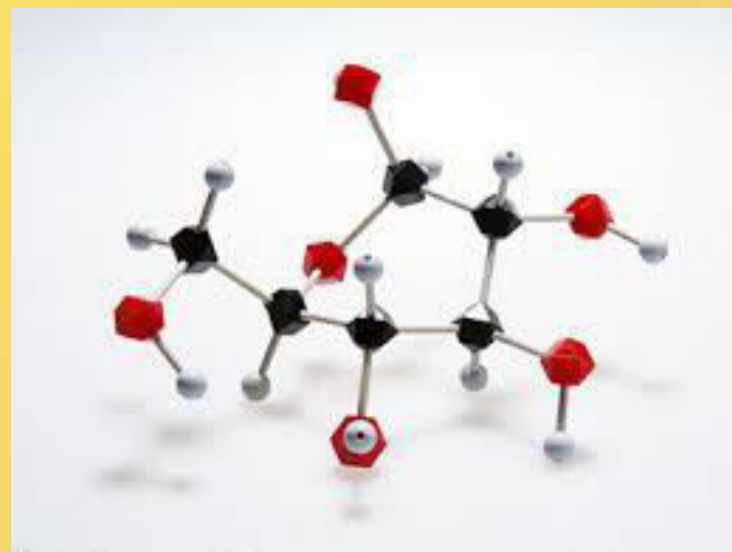
# Research interest

**My research interest is focus on several issues as follow:**

- ◆ **Evaluation of bioactive effects (including antidiabetic, antioxidant and , antitumor and antiobesity effects ) of phytochemicals from sericultural resources and correlated mechanisms based on results in vitro and in vivo, as well as interactions among different compounds with bioactivity. For example, 1-deoxynojirmycin and structural and functional analogs, fagomine.**
- ◆ **Change law or dynamics of bioactive compounds from sericultural resources depending on cultivar, harvest time and physiological stages.**
- ◆ **Technique optimization of bioactive compounds from sericultural resources formulating optimization of functional food made by sericultural resources and bioactivity stabilizing technology during processing.**

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