

Alcoholic Glycosides

Salicin



Salicin is an alcoholic β -glucoside. Salicin is an anti-inflammatory agent that is produced from Salix plant, used as an analgesic, anti-inflammatory, and antipyretic. It is transformed to salicylic acid and has an action very similar to aspirin. . When consumed, the acetalic etherbridge is broken down. The two parts of the molecule, glucose and salicylic alcohol, then are metabolized separately. By oxidizing the alcohol function the aromatic part finally is metabolized to salicylic acid.

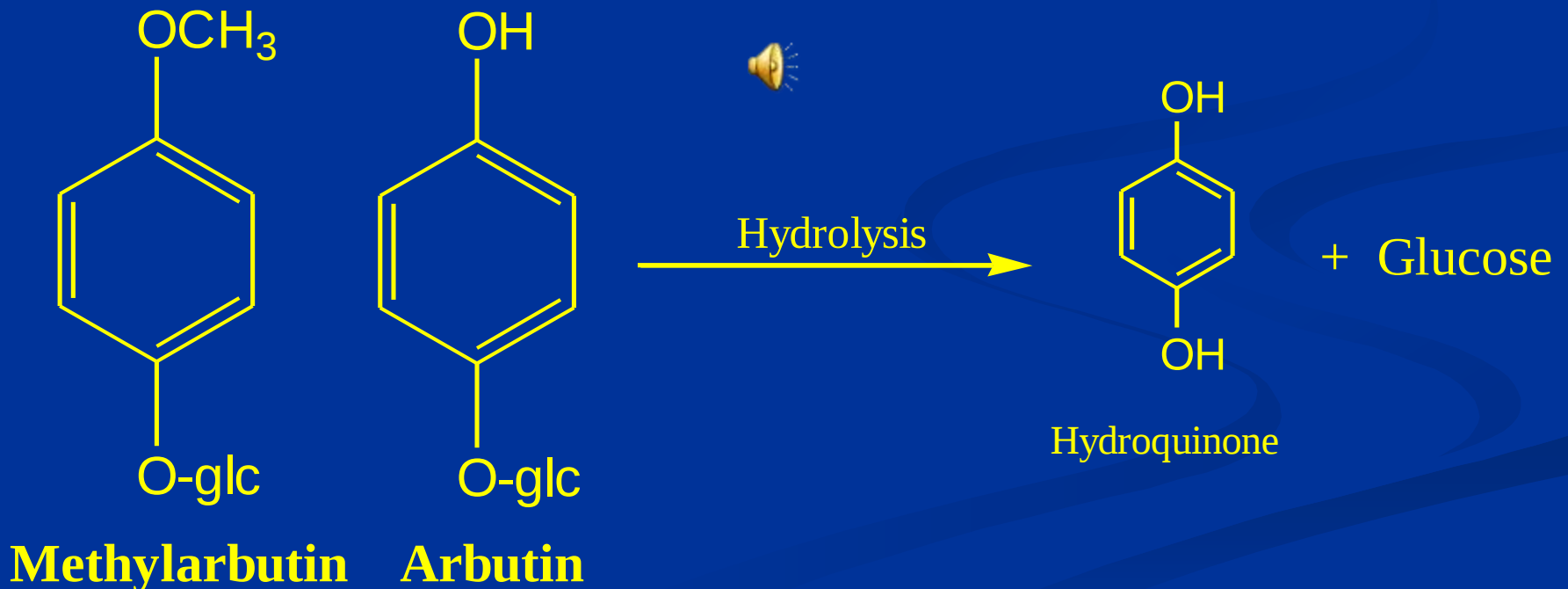
Salix alba



Phenol glycoside

Arbutin & Methyl Arbutin

- **Source:** Uva Ursi (Bearberry leaves).
- **Uses:** Diuretic- Bactericidal.





"uva ursi," which means "bear's grape." Most authorities refer to *Arctostaphylos uva-ursi*.

Uva ursi is used primarily for urinary tract disorders, including infections of the kidney bladder and urethra; swelling (inflammation) of the urinary tract; increased urination .

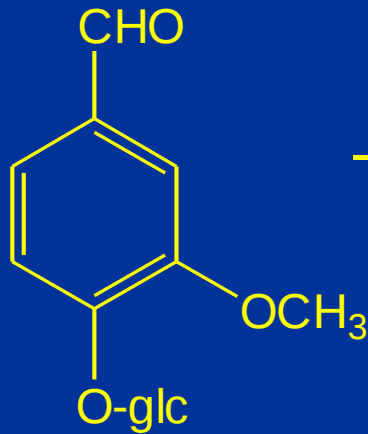
Uva ursi has been used to treat urinary tract infections; as a diuretic; to treat induced contact dermatitis, allergic reaction-type hypersensitivity, and arthritis

Aldehydic Glycosides

1- Glucovanillin

- **Source:** Vanilla pods.
- **Uses:** Flavouring agent.

Glucovanillin

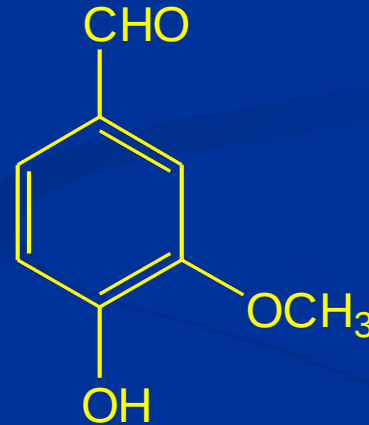


Green vanilla pods
Bitter in taste
Odourless

Enzymatic Hydrolysis



Vanillin



Brown vanilla pods
Sweet in taste
Vanilla odour

+ Glucose



Vanilla



Vanilla planifolia

family (Orchidaceae).



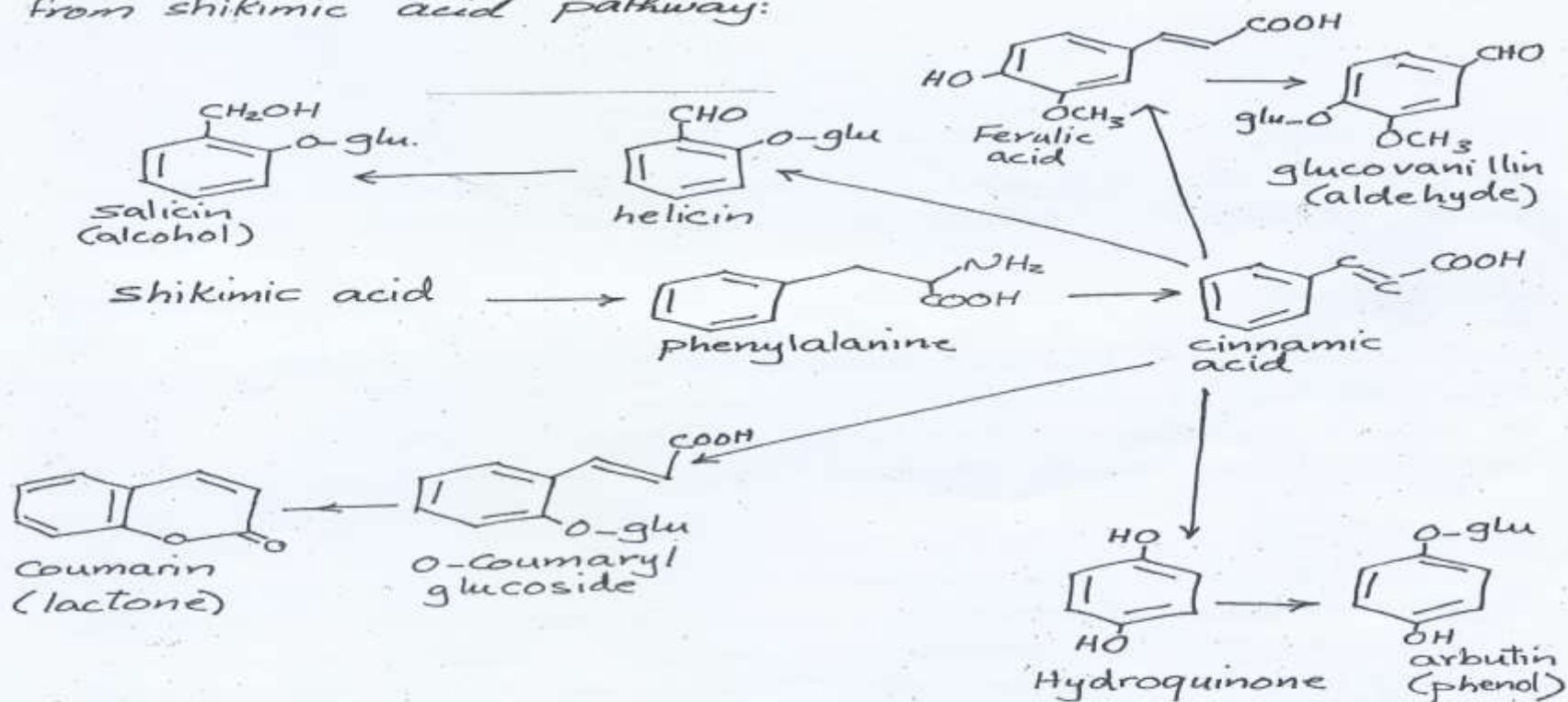


Alcohol glycosides

Biosynthesis

Because of the close relationship between this group & other like aldehyde, lactone & phenol - the biosynthesis of all these groups will be discussed together.

Available evidence indicates that the aromatic nuclei of these compounds derive from C_6-C_3 precursors formed from shikimic acid pathway:



Salicin is an alcoholic glycoside obtained from several species of *salix* & *populus* (F: Salicaceae). The principle commercial sources are *Salix purpurea* & *S. fragilis*.

Salicin is hydrolysed by emulsin as well as by dilute acid to give aglycone (salicyl alcohol) & D-glucose.



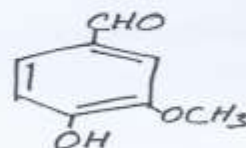
Uses
as antirheumatic, probably through formation of salicylic acid.



Vanillin is the aglycone of aglycoside glucovanillin (avenein) found in vanilla. Vanillin is methyl proto catechuic aldehyde.

Vanilla

or Vanilla Bean is the full-grown unripe fruit of *Vanilla planifolia* often known in commerce as Mexican or *Vanilla tahitensis*, known in commerce as Tahiti Vanilla (F: Orchidaceae)

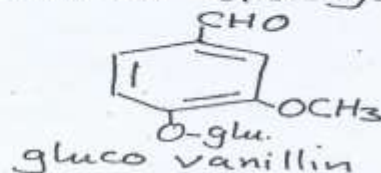


vanillin

Constituents

Vanilla contains two glycosides:

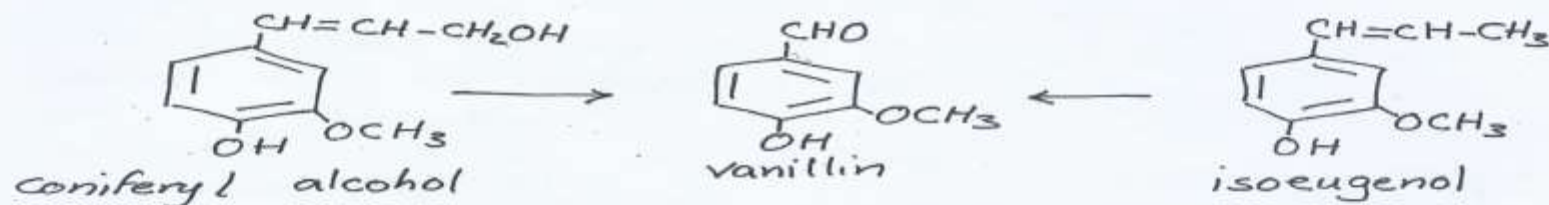
- 1- glucovanillin (avenein) - upon hydrolysis with enzyme gives vanillin & glucose
- 2- glucovanillic alcohol $\xrightarrow{\text{hydrolysis}}$ vanillic alcohol + glucose
vanillic alcohol may oxidize to vanillic aldehyde (vanillin)



Uses

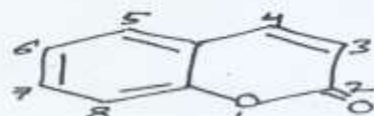
In the form of vanilla tincture used as a Flavoring agent. Also as a source for vanillin.

Vanillin is 4-hydroxy-3-methoxy benzaldehyde. It may be obtained naturally from vanilla or synthetically from coniferyl alcohol & from isoeugenol



Lactone glycosides

Including the widely distributed coumarin having the general formula:



In addition, several other useful drugs are classified under this heading

Coumarin

Tonka or Beans of Tonquin are the ripe seeds of *Coumarouna odorata* F; Leguminosae.

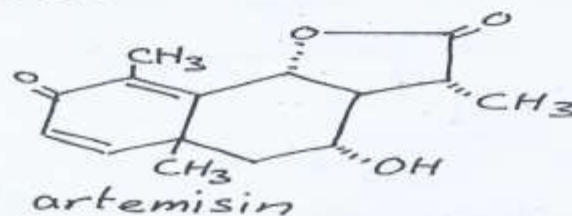
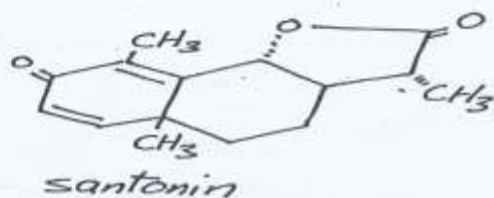
It contains 1-3% coumarin, & it has been used as a flavoring agent, & used also as a flavoring for tobacco.

Coumarin: is a lactone of orthohydroxy cinnamic acid, colorless crystals with fragrant odor & a bitter aromatic taste. It was used formerly as a flavoring agent.

Santonin
Santonica or Levant wormseed is the dried flower heads of *Artemisia cina* F. Compositae

Constituents

The drug contains santonin 2-3%, artemisin which is (8-hydroxy santonin) & volatile oil.



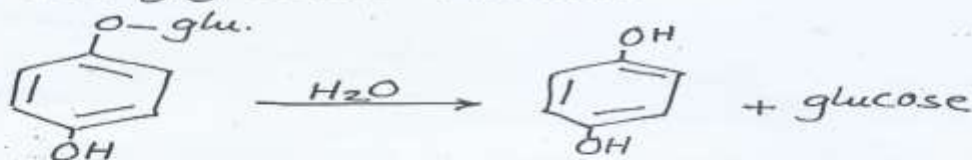
Uses
as anthelmintic

Phenol glycosides

Upon hydrolysis gives phenolic compounds & sugar.

Uva ursi
Is the dried leaf of *Arctostaphylos uva-ursi* F. Ericacea.

Constituents
Contains the glycoside Arbutin



Uses
Uva ursi has been used for many years as a diuretic & as an astringent.