

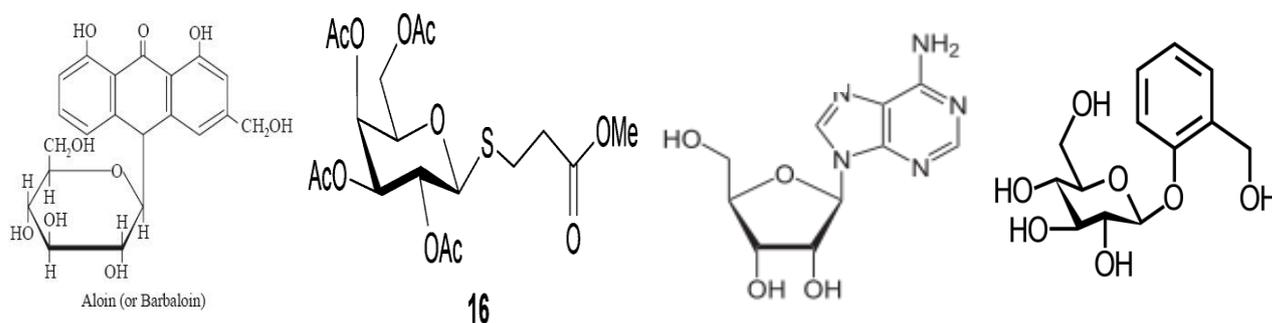
## a glycoside

is a molecule in which a sugar is bound to another functional group via a glycosidic bond. Glycosides play numerous important roles in living organisms. Many plants store chemicals in the form of inactive glycosides. These can be activated by enzyme hydrolysis, which causes the sugar part to be broken off, making the chemical available for use.

So a glycoside is any molecule in which a **sugar** group is bonded through its **carbon** to another group via a glycosidic bond. The sugar group is then known as the **glycone** and the non-sugar group as the **aglycone** or **genin** part of the glycoside.

Glycosides can be classified according to the atomic involved in glycoside linkage in to :

O- (an *O-glycoside*), N- (a *glycosylamine*), S-(a *thioglycoside*), or C- (a *C-glycoside*). It is also classified according to the sugar moiety in to glucoside(  $\alpha$  and  $\beta$ -glucosides), ribosides ( $\alpha$  and  $\beta$ - ribosides ), rhamnosides ( $\alpha$  and  $\beta$ - rhamnosides), galactosides, mannosides, arabinosides and others.



The sugar group (**glycone**) can consist of a single sugar group (monosaccharide) or several sugar groups (oligosaccharide) eg. Glucose, rhamnose, fructose, arabinose, while The aglycone can consist of terpene, flavonoid, coumarine or others . the linkage between glycine and a glycine is usually oxygen linkage.

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definition, extraction, isolation and purification

The first glycoside ever identified was amygdalin

### Related compounds

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Molecules containing an N-glycosidic bond are known as glycosylamines. Glycosylamines and other glycosides are grouped together as glycoconjugates; other glycoconjugates include glycoproteins, glycopeptides, peptidoglycans, glycolipids, and lipopolysaccharides.

### Chemistry

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- 1- the glycone and aglycone portions can be chemically separated and extracted by hydrolysis in the presence of **diluted acid HCL** and can be hydrolyzed by alkali.
- 2- There are also numerous **enzymes** that can form and break glycosidic bonds. The most important **cleavage enzymes** are the glycoside **hydrolases**, and the most important enzymes in nature are **glycosyl transferases**.
- 3- There are many ways to chemically synthesize glycosidic bonds. **glycosidation refers to the synthesis of glycosides by the reaction of monosaccharides with alcohols** in the presence of a strong acid.

There are many plants containing glycosides: examples:

- 1- *Digitalis purpurea* contain digitalidase
- 2- *Digitalis lanata* contain lantosidase

Extraction:

- A- Drying the crude plant in to 15-30 minute at 100 c,
- B- place it in alcohol or boiling water for 15-20 minute
- C- boiling with acetone and extracted at very low temperature.

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Identification and Purification:

- 1- Treat the product with lead acetate to precipitate the tannins and other non-glycosidic impurities. The excess of lead acetate will be removed by precipitation by expose to H<sub>2</sub>S gas
- 2- The filtered extract is collected and concentrated
- 3- Pass the final extract in to paper chromatography and final crystallization