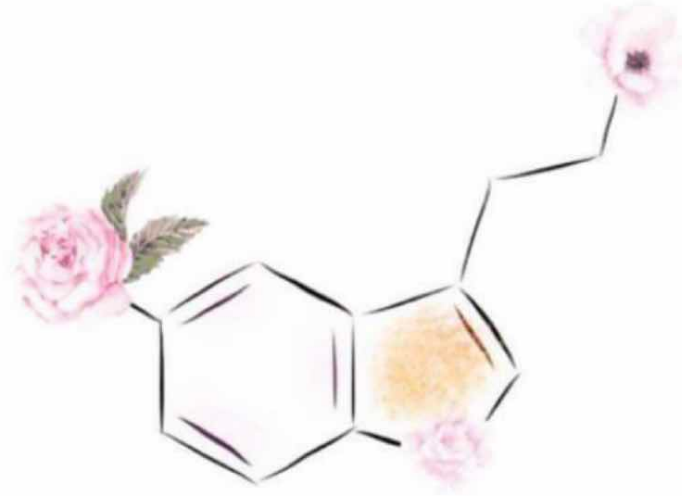


Date:

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لجان الدفعات



تفريغ عضويه 1



stereoisomerism : موضوع المحاضرة

Final

رقم المحاضرة :

غفران خصيبا : إعداد الصيدلانية

# Pharmaceutical Organic Chemistry-1

## Chapter-5: Stereoisomerism

some times effect on ←

1 the physical properties  
of the compounds

2 or the chemical reactions

3 binding receptors

# Chirality & Stereochemistry

- ❖ An object is ***achiral*** (not chiral) if the object and its mirror image are identical



- ❖ A **chiral** object is one that cannot be superposed on its mirror image



# 1. Isomerism: Constitutional Isomers & Stereoisomers

## 1A. Constitutional Isomers

- ❖ **Isomers**: different compounds that have the same molecular formula the same number of H, C, F, Cl
  - **Constitutional isomers**: isomers that have the same molecular formula but different connectivity the attachment
    - their atoms are connected in a different order

# ❖ Examples

الترتيب مختلف ← مركبين مختلفين

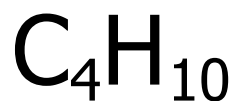
بنائي

## Constitutional Isomers

Molecular

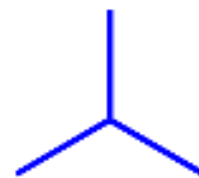
r

Formula

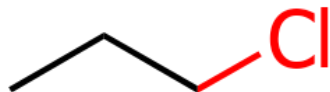
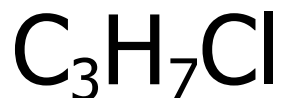


Butane

and

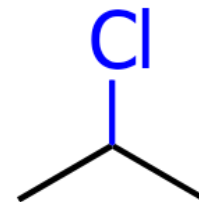


2-Methylpropane



1-Chloropropane

and

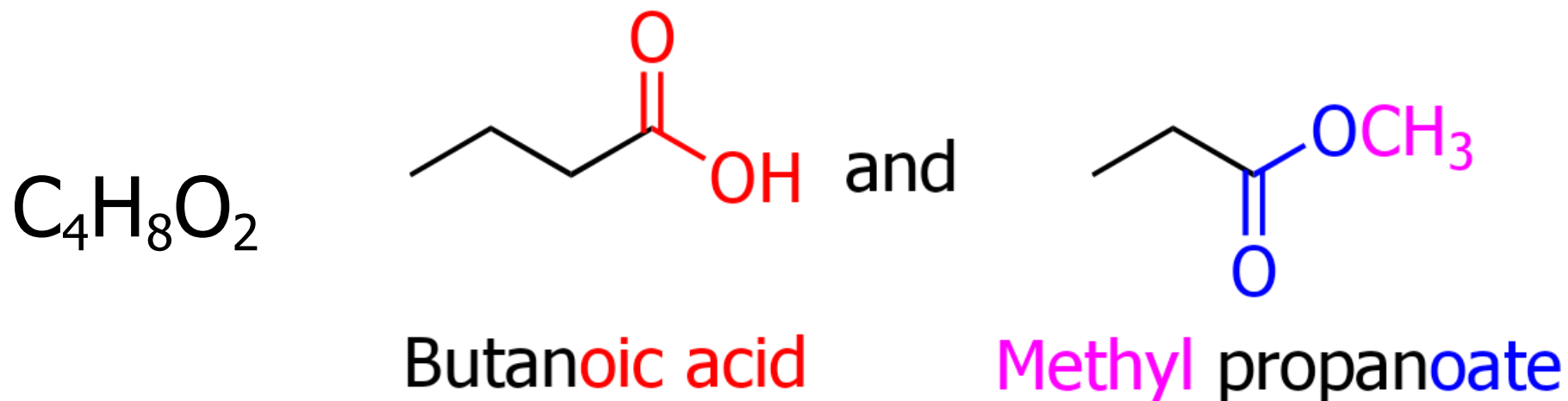
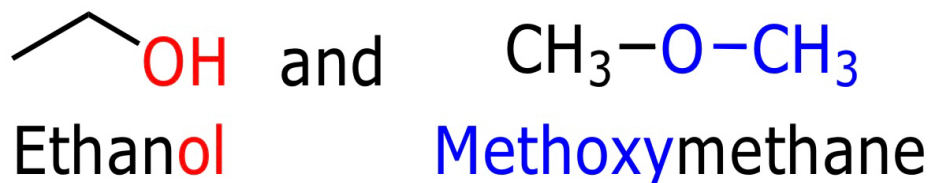


2-Chloropropane

# ❖ Examples

Molecular  
Formula  
 $C_2H_6O$

Constitutional  
Isomers



## 1B. Stereoisomers

- ❖ Stereoisomers are **NOT** constitutional isomers
- ❖ **Stereoisomers** have their atoms connected in the same sequence but they differ in the arrangement of their atoms in space. The consideration of such spatial aspects of molecular structure is called ***stereochemistry***

# 1C. Enantiomers & Diastereomers

❖ Stereoisomers can be subdivided into two general categories:

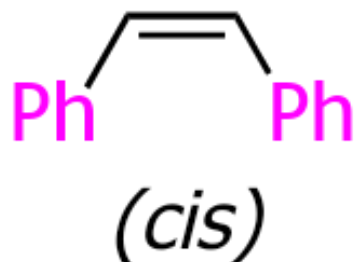
*enantiomers* & *diastereomers*

- **Enantiomers** – stereoisomers whose molecules are nonsuperposable mirror images of each other (لكن الـ هورين لا ينطبقوا)
- **Diastereomers** – stereoisomers whose molecules are not mirror images of each other

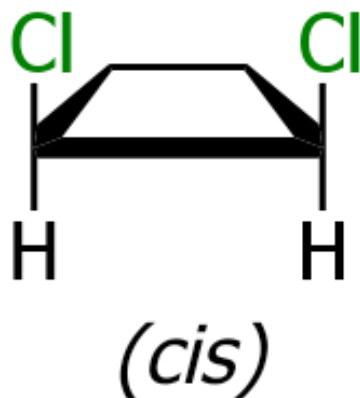
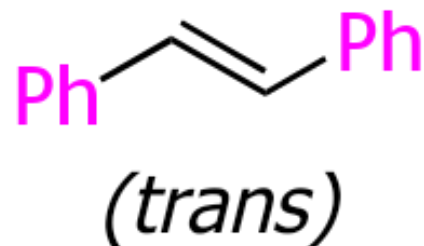
❖ Geometrical isomers  
(*cis* & *trans* isomers) are:

- *Diastereomers*

e.g.



and



and

