

PHYSICAL PHARMACEUTICS I BP(302T)**UNIT I (SOLUBILITY OF DRUGS)****CLASS 1****Topic: SOLUBILITY EXPRESSIONS****CLASS I****Importance of solubility**

- ❑ Select best solvent for the drugs
- ❑ Solubility used to categorize drug substances
- ❑ Can overcome the problems arising during preparation of pharmaceutical solutions
- ❑ Solubility is important to understand to measure, predict, alter and model the solubility of a particular substance and mixture
- ❑ **SOLUTION:** system in which solute molecules dissolved in solvent

Saturated Solution: is one in which the solute in solution is in equilibrium with the solid phase.

- ❑ **Unsaturated or subsaturated** solution is one containing the dissolved solute in a concentration below that necessary for complete saturation at a definite temperature.
- ❑ **Supersaturated solution** is one that contains more of the dissolved solute than it would normally contain at a definite temperature, were the undissolved solute present.



- ▣ **Solubility** is defined in
- ▣ quantitative terms as
- ▣ the concentration of solute in a saturated solution at a certain temperature,
- ▣ qualitative way, it can be defined as the spontaneous interaction of two or more substances to form a homogeneous molecular dispersion.
- ▣ Solubility is an **intrinsic material property** that can be altered only by chemical modification of the molecule.
- ▣ In contrast to this, **dissolution** is an **extrinsic material property** that can be influenced by various chemical, physical, or crystallographic means such as complexation, particle size, surface properties, solid-state modification, or solubilization enhancing formulation

SOLUBILITY EXPRESSIONS

- SOLUBILITY-expressed in a number of ways
- United States Pharmacopeia (USP) describes the solubility of drugs as parts of solvent required for one part solute.
- Solubility is also quantitatively expressed in terms of molality, molarity, and percentage.

- The European Pharmacopoeia lists six categories (it does not use the practically insoluble grouping).

Expression	symbol	definition
Molarity	M	Moles of solute(gram molecular weight)in one liter(1000ml) of solution
Normality	N	Gram equivalent weights of solute in one liter of solution
Molality	m	No of moles of solute in 1000gm of solvent
Mole fraction	x	Ratio of no of moles of solute to the total moles of solute and solvent
Percent by weight	%w/w	No of grams of solute in 100grams of solution
Percent by volume	%v/v	No of ml of solute in one 100ml of solution
Percent weight by volume	%w/v	No of grams of solute in 100ml of solution



Very soluble	Less than 1
Freely soluble	From 1 to 10
soluble	From 10 to 30
Sparingly soluble	From 30-100
Slightly soluble	From 100-1000
Very Slightly soluble	From 100-10000
insoluble	More than 10000

2MARK QUESTIONS

- 1.define saturated solution
- 2.define molarity ,molality

5MARK QUESTIONS

- 1.Define solubility expressions