

### Pharmaceutical Technology for 3rd year students 2<sup>nd</sup> Course, 1<sup>st</sup> Lec.8

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### Pharmaceutical Emulsion

- Introduction
- > Types of emulsions
- Emulsifying agents
- Methods of Preparation of Emulsions
- Tests for emulsion types
- Emulsion Stability
- Phase Inversion
- Emulsion Breaking
- General Guidelines

<u>Emulsion</u>; is a dispersion in which the dispersed phase is composed of small globules of a liquid distributed throughout a vehicle in which it is immiscible.

### **Emulsions encountered in everyday life!**



Pesticide



Asphalt



#### **Metal cutting oils**



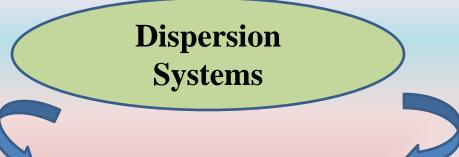
#### Margarine



#### Skin cream



**Ice cream** 



**Emulsion is a** dispersion in which the dispersed phase is composed of small globules of a liquid distributed throughout a vehicle in which it is immiscible

Suspension is a two phased system in which a finely divided solid is dispersed in a continuous phase of solid, liquid or gas ✓ The dispersed phase → the internal phase.
The dispersion medium → the external or continuous phase.

Because the external phase of an emulsion is continuous, an o/w emulsion may be diluted or extended with water or an aqueous preparation and a w/o emulsion, with an oleaginous or oilmiscible liquid. Generally, to prepare a stable emulsion, a third phase, *an emulsifying agent*, is necessary.

Depending on their constituents, the viscosity of emulsions can vary greatly, and pharmaceutical emulsions may be prepared as liquids or semisolids.

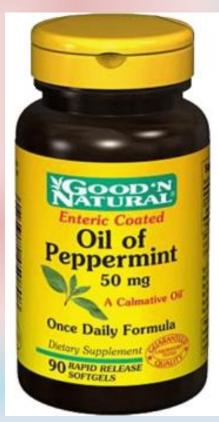
## **Emulsion Classifications**

Type of Emulsion	<b>Dispersed Phase or Internal Phase</b>	Dispersion medium or external/ continuous phase
O/W	Oil	water
W/O	water	oil
W/O/W O/W/O	Multiple Emulsion	

 Based on the constituents and the intended application, liquid emulsions may be employed as;









# Topical



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### Parentral



- Many pharmaceutical preparations that are actually emulsions are not classified as such *because* they fit some other pharmaceutical category more appropriately. For instance,
- 1) Lotions
- 2) Liniments
- 3) Creams
- 4) Ointments
- 5) Vitamin drops