



*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

✓ 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.

# *Emulsions encountered in everyday life!*



**Pesticide**



**Asphalt**



**Skin cream**



**Metal cutting oils**



**Margarine**



**Ice cream**

## Dispersion Systems

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graph TD; A([Dispersion Systems]) --> B[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]; A --> C[Suspension is a two phased system in which a finely divided solid is dispersed in a continuous phase of solid, liquid or gas];
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**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 oil-miscible 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	Dispersed Phase or Internal Phase	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;

# Oral



# *Topical*



# Parenteral



✓ 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