



# An Overview on Nanoemulsion: Different aspects, formulation and evaluation parameters

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Received 05-05-2023	<b>Abstract.</b> Nanoemulsions are well known formulation for immiscible Pharmaceutical products. In the modern era Nanoemulsion formulation are growing very fast. This is important to understood the benefits preparation techniques, methodology, equipments, machinery and many more to improve Nanoemulsion. In the Nanoemulsion various types of low energy emulsification techniques like high pressure homogenization, ultrasonication and microfluidization techniques are used to formulate. Due to Nanoemulsive particles, the absorption rate of drug in nanomulsion is higher in the body. It also enhance the bioavailability of the drug. Thus this can be say that the immiscible drug in nanoemulsion is more effective than other dosage form.	<b>Keywords:</b> Nanoemulsion, Surfactant, Co-surfactant, Bioavailability, Nano size droplet, Homomixer
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## INTRODUCTION

Nanoemulsion is the ratio of surfactant, co-surfactant and aqueous phase which is emulsified in oil phase. All these particles are colloidal dispersed in the nanoemulsified mixture. Nanoemulsion aim to be achieve higher bio-availability so drug should be readily and completely absorbed to produce high efficacy of drug. In the formulation of nanoemulsion drug substances are converted in the nano size droplet ( 1- 100 nm).

Nanoemulsion are made up of two or more immiscible colloidal isotropic submicron, ultrafine particle system in the mixture with surfactant, co-surfactant to finalize in one phase.

### Benefits of Nanoemulsion:-

- To reduce the absorption mutability.
- To achieve lipid fat substance solubility.
- To reduce the gritty taste.
- Help to achieve wide distribution by various routes ( topical,oral,IV ).
- To gain fast and quick access of drug in the body.
- Nanoemulsion have mightiness to mix huge amount of hydrophobic compounds.
- It has ability to produce standard Drug Delivery System.

- It is irritation free and non toxic.
- It uplifts the bioavailability of drug.
- It is present in various formulation i.e. foams, creams, sprays and liquids.
- To hide the real taste.

### Disadvantage of Nanoemulsion:-

- Without surfactant and co-surfactant emulsion doesn't stable.
- Temperature and pH like atmospheric factors affects the nanoemulsion's stability.
- Nano droplets present in emulsions is required high quantity of surfactant as well as co-surfactant for stability.
- The additional matters which have high melting point produce rate limiting solubility capacity.
- Environmental circumstances like temperature affects the nanoemulsion durability.

### Taxonomy of nanoemulsion:-

- Oil in water (O/W )nanoemulsions (oil droplets dispersed in aqueous phase)
- Water in oil (W/O )nanoemulsions ( water droplets dispersed in oil phase )
- Bi- continuous nanoemulsions (oil and water inter dispersed within the system)