

Special Issue: NCNN-2014

(National Conference on Nanoscience and Nanotechnology - 2014)

## Nano-Emulsion: An Emerging Carrier for Drug Delivery

Rahul Tiwari\*, K. Kesavan

*Institute of Pharmaceutical Sciences, Guru Ghasidas Vishwavidyalaya, Koni, Bilaspur, C.G., E-mail:  
rahul121tiwari@gmail.com*[www.peertechz.com](http://www.peertechz.com)

Nano-emulsions, as non-equilibrium systems, present characteristics and properties which depend not only on composition but also on the preparation method. Nano-emulsion droplet sizes fall typically in the range of less than 1000 nm and show narrow size distributions. Nano-emulsions report their formation by dispersion or high-energy emulsification methods, an increased interest is observed in the study of nano-emulsion formation by condensation or low-energy emulsification methods (based on the phase transitions that take place during the emulsification process). Nano-emulsions are proposed for numerous applications in pharmacy as drug delivery systems because of their capacity of solubilizing non polar active compounds. Fundamental difference between microemulsions and nano-emulsions: microemulsions are equilibrium systems (i.e. thermodynamically stable), while nano-emulsions are non-equilibrium systems with a spontaneous tendency to separate into the constituent phases. Although there have not been reported too many applications in other fields, there is a great potential for nano-emulsion applications if Oswald-ripening destabilization mechanism is limited by using very insoluble oils. Currently, research on nano-emulsion system is aiming towards the specificity of drugs action and target, to facilitate the bioavailability of drugs through biological membranes, or to protect a drug against enzyme inactivation. It is an effort to summarize the recent development in the area of nano-emulsion, which are examined in relation to their use in different route of administrations.