

## **Nano-emulsion/Nano-suspension as Precursors for Oral Dissolvable Film to Enhance Bioavailability for Poor-water Solubility Drugs**

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**Abstract :** Oral dissolvable films have been considered as a unique alternative approach to conventional oral dosage forms. The films could be administered via the gastrointestinal tract as conventional dosages or through sublingual/buccal mucosa membranes, which could enhance drug bioavailability by avoiding the first-pass effect and improving permeability due to high blood flow and lymphatic circulation. This work has described a state-of-art technic using nano-emulsion/nano-suspension as a precursor for the film to enhance the bioavailability of BCS class II drugs. The drug molecules are consequentially processed through the emulsification, gelation, and film-casting processes. The gelation process is critical to stabilizing the nano-emulsion for the film-casting as well as controlling the drug release process. Furthermore, the size of the nanoparticle on the film has a strong correlation with the size of the micelles in the precursor and the condition of the gelation process. It has been discovered that nanoparticle from 200 nm to 300 nm has shown the highest permeability for sublingual administration. In one example shown in work, the bioavailability of a low solubilize drug has been increased from 10% to 24% via sublingual administration of the film. The increasing of the bioavailability was thought to be associated with the enhancement of the diffusion process of the drug in the saliva layer above the mucosa membrane and the fact that the presents of the emulsifier help lose the rigid junction of the mucosa cells.

**Keywords :** oral dissolvable film, nano-suspension, nano-emulsion, bioavailability

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