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### **Investigation of bottom-up prepared nanostructures**

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Generally, by systemic administration the low oral bioavailability can be caused by poor solubility. Therefore, increasing the water solubility of active pharmaceutical ingredients (API) enhances the oral bioavailability of drugs. Various nanonization techniques can be used to achieve increased solubility. Nanofabrication can be classified as bottom-up and top-down methods. The bottom-up strategy is considered more advantageous than the top-down approach because it has a better chance of producing more homogenous nanostructures. Electrospun nanofibers and nanocapsules could be examples of the bottom-up approach. Nanofibers can be prepared by using electric force during the electrospinning procedure. The amorphous form and the large surface area prove the increased water solubility of the API [1-2]. Nanocapsules are vesicular systems that carry the API inside a cavity surrounded by a polymeric membrane. The advantages of the nanocapsules are reducing the toxicity and improving the stability of the drugs and the high drug encapsulation efficiency.

Our aim is enhancing the water solubility and the dissolution rate of different APIs by bottom-up nanofabrication methods such as electrospinning and nanoprecipitation. As a plan, the investigation of the prepared electrospun nanofibers and the nanocapsules covers the micrometric and physicochemical properties, *in vitro* dissolution of the API. The final purpose of the work is to develop preparation protocols for electrospinning and nanoencapsulation technology.

#### References

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