Nano-encapsulation of polyphenolics

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Phenolics and their glycosides have received during the last few decades, an increasing attention from chemists and pharmacologists. Previous comprehensive studies proved that plant phenols possess diverse effect on biological systems. The diversity of their structures is the basis of the recent increase in the detection of the various biological and pharmacological activities which have been extensively researched such as antitumor, antibacterial, enzyme inhibitory, anti-hepatotoxic, antioxidant, anti-allergic, anti-inflammatory, anti-osteoporotic, analgesic, antiviral and immunomodulating. These abilities make polyphenols interesting for the treatment of various diseases like inflammation or cancer, but also for anti-ageing purposes in cosmetic formulations, or for nutraceutical applications. Unfortunately, these compounds lack long-term stability as they are very sensitive to light and heat. Moreover, polyphenols often present a poor biodisponibility mainly due to low water solubility. Lastly, many of these molecules possess a very astringent and bitter taste, which limits their use in food or in oral medications. To circumvent these drawbacks, delivery systems have been developed, and among them, encapsulation would appear to be a promising approach. Therefore, the administration of phenolic compounds requires the formulation of a finished protecting product able to maintain the structural integrity of the polyphenol until the consumption or the administration, mask its taste, increase its water solubility and bioavailability, and convey it precisely towards a physiological target. Among the existing stabilization methods, encapsulation is an interesting means. The use of encapsulated polyphenols instead of free compounds was the source of numerous works.

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The first integrated plastic prefilled safety syringe

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PFS has many benefits but comes with the risk of needle-stick injury on its own. With the trend of global needle-stick legislation, most drug products in PFS require sharp protection devices driven by safety concerns and regulatory mandates. While the approach for making syringes safe continues to be dominated by add-on needle cover devices, integrated prefilled safety syringes (in glass and plastic) are now being developed. MCI’s MySafety Syringe is a user-activated, automatic needle-retraction safety syringe. At the end of injection, by pushing the collapsible plunger rod, the used needle retracts and is sequestered inside the syringe barrel. MySafety Syringes are already commercialized as empty PP syringes (in 1cc and 3cc) and are turned into an integrated plastic prefilled safety syringe (iPPFSS) in nested tub with COC and COP differentiated by its simple design and container closure system. iPPFSS (aka MySafill syringe) takes advantage of material design flexibility, eliminates glass breakage and provides a great life cycle management tool for drug products in PFS. It could ensure the quality of syringes before fill and would not waste the precious drugs due to assembly process which could occasionally happen to the add-on devices. Its compact design saves costs in cold storage space, transportation and waste disposable. The design of MySafill Syringe is different from all the safety syringes in the market (or under development) and is much easier to industrialize as already demonstrated by the commercialized empty PP syringes.

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