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TITOLO (maiuscolo)

DELIVERY OF BUDESONIDE BY MEAN OF BILE ACID-BASED NANOSYSTEMS

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Riassunto

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In this study ursodeoxycholic acid (U), sodium cholate (C) and sodium taurocholate (T) were selected to prepare bile acids-based vesicles and nanoparticles (i.e. bilosomes and biloparticles) to improve the solubility, the absorption and to preserve the activity of budesonide, used as a model lipophilic drug. It is well known that bile salts are physiologically involved in the digestion of lipids therefore they can affect the absorption of poorly soluble drugs in different ways1.
Bilosomes and biloparticles were prepared following standard protocols with minor changes2. The obtained systems showed good encapsulation efficiency and dimensional stability. Particularly, biloparticles showed an increase in encapsulation efficiency following the order U < C < T.
The in vitro release of budesonide from both bilosystems was performed by means of dialysis using either a nylon membrane or a portion of a Wistar rat small intestine and two receiving solutions simulating gastric or intestinal fluid (i.e. FASSGF and FASSIF). Both in gastric and intestinal fluid, budesonide is released from bilosystems more slowly than the reference solution, while biloparticles showed a significant improvement of budesonide passage into aqueous solution. On the other hand immunofluorescence experiments indicated that budesonide-containing U-bilosomes are able to decrease the inflammatory response induced by glucose oxidase stimuli and to counteract the ox-inflammatory damage within intestinal cells.
In conclusion the obtained bilosystems can efficiently encapsulate budesonide while preserving its properties. However, the influence of different bile acids (i.e. U, C, T) on the performance of the bilosystem needs to be studied in depth to understand their contribution to the specific drug release properties. Future studies will be carried out to delve deeper into the reasons for the different behaviours expressed by the different bile acids used. The encouraging results showing the efficient antioxidant effect by a complete restoring of IL-1β basal level after U-bilosomes treatment, suggest the possibility to further investigate the use of bilosystems to counteract the ox-inflammatory damage within intestinal cells especially for those intestinal pathologies correlated to the development of an oxidative stress status.

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