Optimization of protein loading and release based on porous silicon particle size

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Oral administration is contemplated to be the most suitable and comfortable method of delivering drugs because it removes the inconvenience of frequent injections, physical stress, and difficulties in handling proteins. Oral administration of proteins and peptides is limited due to their propensity to degrade in the harsh conditions present in the stomach (i.e low pH, the presence of proteolytic enzymes). Porous silicon is relevant as a drug delivery material because of its biocompatibility, biodegradability, high loading efficiency, and controllable drug release characteristic (hours to months). Porous silicon particles are proven to protect the sensitive cargo from degrading under areas with hostile conditions such as the stomach.

References

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Figures

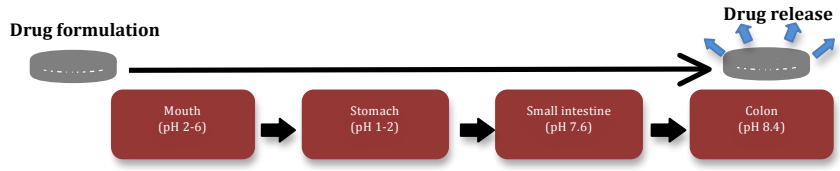

Figure 1: Schematic representation of the body harsh conditons simulated in the experiment.

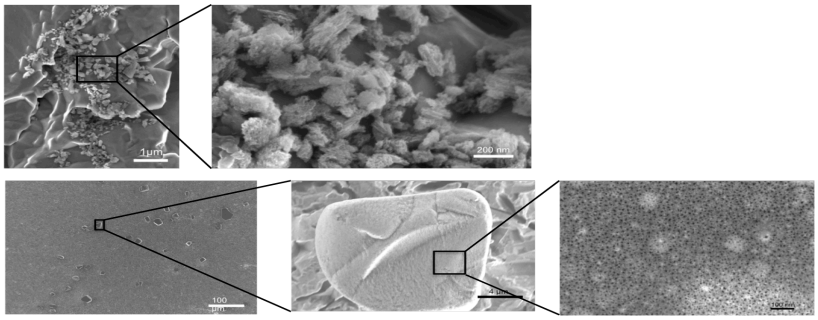

Figure 2: SEM images of the Si particles at diferent magnifications for different particle sizes.