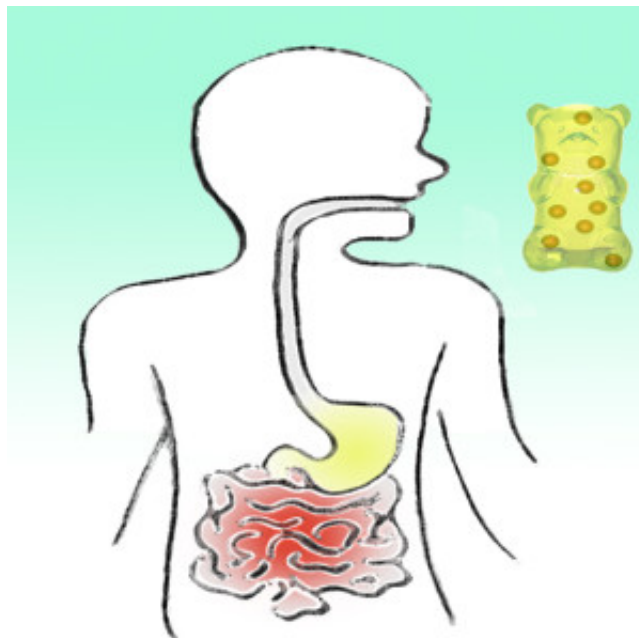


## Gelatin composites for controlled release of actives

During the 1950s the pharmaceutical market was flooded with oral products promising a prolonged release of actives. Since then a constantly growing effort has been devoted to the design of materials and formulations able to spatially and temporally control the release of drugs in diverse areas of the human body, finally aiming at reducing both the dosage and the frequency of the administration.



Gelatin is already contained in a huge number of food products, and many people include it in their diets as a daily supplement because of its health benefits. Gummy candies based on gelatin would be then ideal vehicles for the oral administration of drugs and actives. Unfortunately, as most of us have experienced with pleasure, gummy candies quickly melt in our mouth: *i.e.*, the fast dissolution of gelatin in physiological conditions should be strongly reduced to achieve a controlled release profile. This can be achieved by increasing gelatin strength either by chemicals or radiative methods in the form of cross-linking molecules or UV/gamma radiations. While both these methods are effective, they introduce toxicity issues, at least at the consumer perception level.

In our paper we describe a very simple method to prepare a gelatin-based oral controlled-release product by exploiting the peculiar thermogelling properties of Pluronic F127(R), a polymer already in use in many commercial pharmaceutical formulations. When heated up from room temperature to 37 °C, aqueous solutions of F127 turn into gels. Our results demonstrate that including micrometric Pluronic F127 droplets inside gelatin allows for a slow and sustained release of a model drug. Furthermore, the ability of Pluronic F127 to upload hydrophobic molecules extends the use of gelatin-based materials to drugs that are not soluble in pure gelatin.

Both gelatin and Pluronic F127 are already approved by FDA; therefore the results of this work could be easily and immediately translated into a commercial product, such as a gummy candy containing hydrophilic and/or hydrophobic drugs and actives, whose oral administration would be pleasant to kids and adults.

## **Publication**

[Pluronic/gelatin composites for controlled release of actives.](#)

Tatini D, Tempesti P, Ridi F, Fratini E, Bonini M, Baglioni P

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