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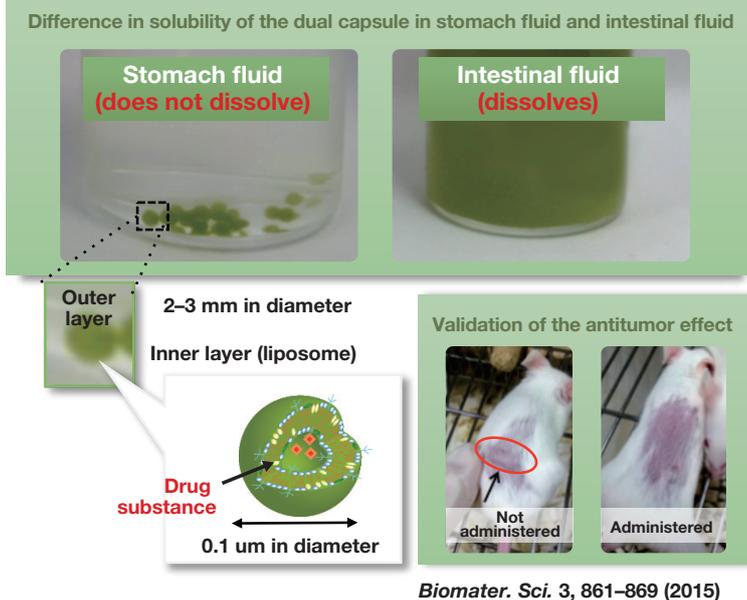
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Purpose of Research

To date, a vast number of pharmaceuticals and supplements have been developed to treat diseases and maintain health. In order to deliver such drugs into the body so they can realize their effect, it is necessary for them to be smoothly absorbed into the body. Also, the method for ingesting the drugs should not involve any labor or stress. In this research, with the aim of enhancing the efficacy of existing drugs, we are developing a capsule that can be ingested orally and delivers the drug to the intestines, which has a high absorption rate.

Summary of Research

We have developed a capsule that can be ingested orally and promotes the absorption of the drug substance. The main feature of this capsule is its dual layer structure. The first layer (outer layer) is a microscopic spherical capsule that is made from a gelatinous substance derived from seaweed. The second layer (inner layer) is a nano-sized capsule which holds the drug substance. The first layer is resistant to stomach acid and does not dissolve in the stomach. This protects the drug substance and limits dissolution in the stomach. Also, this layer is expected to provide the benefit of limiting any deterioration of the drug substance. Once the capsule reaches the intestines, the outer layer immediately dissolves, releasing the inner nano-capsules. Using this dual layer capsule, it is possible to deliver drug substances, such as existing supplements, to the intestines without waste, and this is expected to increase the concentration of the drug substance in the intestines and promote absorption.



Comparison with Conventional or Competitive Technology

- Drug substances can be ingested orally.
- Possible to encapsulate a wide range of drug substances, including substances with poor water solubility.
- The size of the drug substance can be adjusted (from micro to millimeter in size), making it easy to swallow.

Expected Applications

- Make it possible to orally ingest substances with beneficial pharmaceutical effect.
- Increase the absorbability of existing supplements.
- Limit the “bad taste,” such as bitterness, of particular drug substances, and make easy to ingest such substances orally.

Challenges in Implementation

We are currently validating the antitumor effect of a model drug in mice, but because no pharmaceutical effect trials have been conducted in humans, it is necessary to study formulations for humans.

What We Expect from Companies

Companies with a drug substance they would like to use with this capsule should feel free to consult with us.

Points

- Transport drug substances to the intestines using a gel derived from seaweed
- Nano-capsules can encapsulate substances with poor water solubility within the gel

Future Developments

We will test the encapsulation of a wide range of drug substances other than the model drug and confirm what properties the drug substances that can be encapsulated and released have. Based on this data, we will present a formulation as a universal drug capsule.

- Intellectual Property: Patent application 2014-093428 “Oral treatment drug”
- Prototype: Available
- Sample: Requires consultation

