New gastro-resistant formulations of herbal medicinal products

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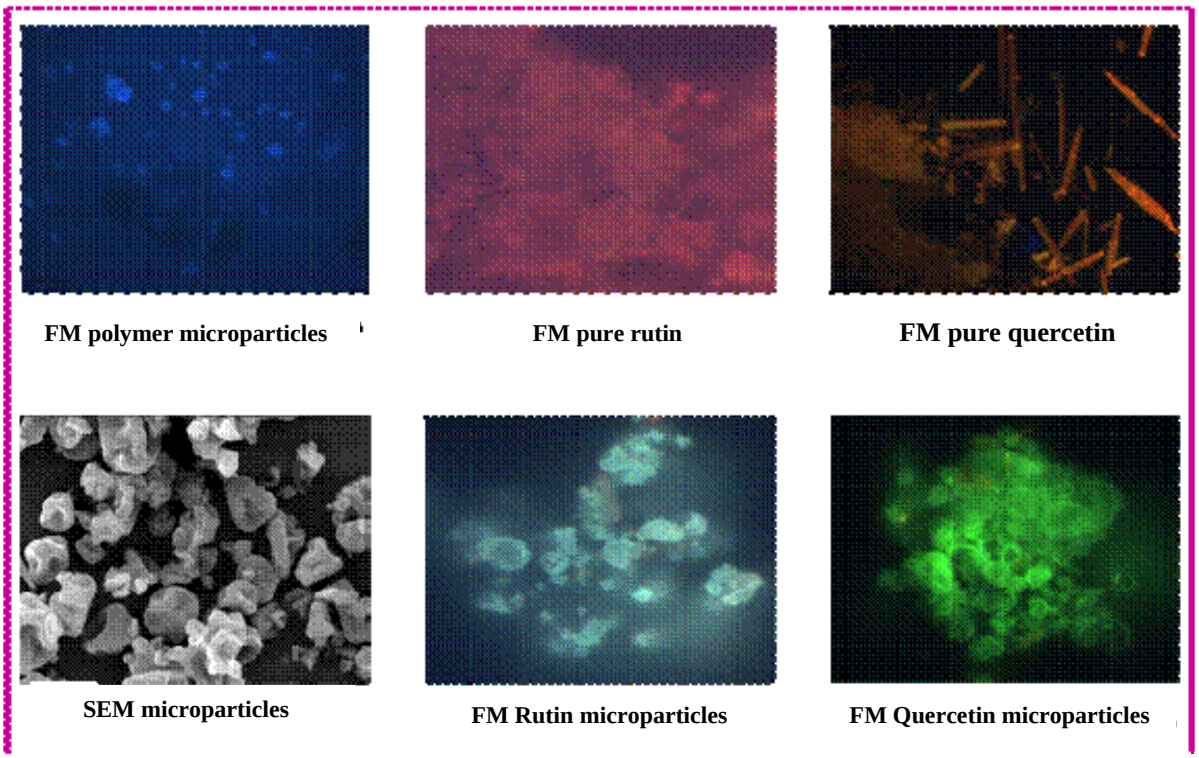
Flavonoids with antioxidant, antiulcer and antinflammatory properties are largely found in fruit, vegetables and medicinal plants. Their use as anti-inflammatory drugs and to treat venous insufficiency and capillary fragility is strongly limited by a poor bioavailability after oral administration. Microparticles made of biodegradable and biocompatible polymers are able to protect these compounds from degradation in the gastric environment. The proposed product appears quite interesting to improve flavonol bioavailability allowing a complete release in the intestinal fluid.



FM polymer microparticles | **FM pure rutin** | **FM pure quercetin**

SEM microparticles | **FM Rutin microparticles** | **FM Quercetin microparticles**

1. Description of the product

The project involves formulation of gastro-resistant microparticles, containing vegetal active ingredients, present in phytotherapic and vegetal matrix. Vegetal active ingredients have a large use in alimentary integrators in European and Mediterranean traditional medicine.

Microparticles are prepared by spray drying from different biodegradable and biocompatible polymers. They are able to protect herbal medicinal products from alteration (oxidation and degradation) of time and environmental conditions.

Microparticle systems are carrier for oral administration; they preserve stability in the whole gastro-intestinal tract and are able to maintain constant the biological activity.

2. Innovative aspect of the product

Spray drying technique permits to encapsulate biological products with low stability, both with high molecular weight (as peptides and protein) and with low molecular weight (as flavonoids), without sensible degradation.

Final product became stable, easily manageable also for the following production of capsules, tablets, suspensions, emulsions.

This technique, together with the employ of gastro-resistant polymers, permits a protection in gastric environment. It permits, also, a controlled release of active ingredient in milder intestinal conditions, increasing the absorbed fraction and maintaining constant bioavailability.

3. Main advantages of the offer

Gastro-resistance's microparticles offer a simple, reproducible, rapid, cheap method applicable also on large scale preparation for companies who deal with phytotherapic and food integrators.
A proper composition of emulsion, solution, suspension and the modulation of the operative conditions, permit a general applicability of that method to polymers and active ingredients with different chemical–physical properties.
For example: quercetin, rutin, naringin and naringenin are efficiently encapsulated in microparticles based on cellulose acetophtalate and polymethacrylate. These gastro-resistance polymers are able to protect flavonoids from oxidation in environmental conditions and from degradation in drastic pH conditions, modulating at the same time the release of the active ingredient.

4. Technology key words

Flavonoids, radical scavengers, dietary supplement, biodegradable polymers, enteric dosage forms.

5. Current Stage of Development

Work in progress – Tested in laboratory

6. Intellectual Property Rights

Some products of the research are covered by patent

Technical and scientific publications

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