University of HUDDERSFIELD

Powered by: IN-PART

Natural Plant Based Coatings to Improve the Delivery and Efficacy of Nutraceuticals and Traditional Medicines

A natural alternative for developing pH responsive dosage forms

Reference: Nutraceuticals

Ragesoss, Wikimedia, CC BY-SA 3.0 https://commons.wikimedia.org/wiki/File:B_vitamin_supplement_tablets.jpg

IP Status

Patent application submitted

Seeking

Licensing, Development partner

About **University of Huddersfield**

The University of Huddersfield understand how crucial research can be in staying ahead of the competition and growing – or maintaining – your market position, and that's why they're committed to ensuring the highest standards of research throughout the university.

Background

Traditional medicines and nutraceuticals contains natural ingredients, usually formulated in the form of functional foods or as dietary supplements. Majority of these ingredients are susceptible to degradation by the gastric acid or provoke nausea or induce vomiting upon oral administration. The gastroresistant coatings, widely researched and used in pharmaceuticals, employs enteric polymers which are not regarded as natural ingredients or do not possess the GRAS (generally regarded as safe) status by the regulatory authorities, therefore, cannot be used for nutraceutical products. Consequently, most of nutraceuticals are not formulated as gastroresistant and therefore either they are not well tolerated or lack efficacy. The subject plant based novel formulation addresses this problem.

Tech Overview

The subject technology is based on a plant-origin natural polymeric material which is already considered as safe. The material also has a safe-use history for some food application historically. The novel formulation offers a platform technology with wider applications across pharmaceutical and nutraceutical sector. Apparently, any active ingredient packaged in a standard form (pill, tablet, capsule, granule, particles, pellets) can be simply over-coated with novel natural films using standard industrial equipment. The active ingredients can also be encapsulated in a capsule shell over-coated with current technology. The pK_a of the material was measured to be 3.5 suggesting it will fully dissociate around pH ≥ 5.5 confirming its suitability as a natural alternative for developing pH responsive dosage forms, in particular gastroresistant products.

Figure 1. Tablets coated with novel natural polymeric films.

Figure 2. Ionisation behaviour of the novel polymeric material over a range of pH

Figure 3. Active substance release (%) over time in simulated gastric media (pH 1.2) for 2 hours followed by simulated intestinal media (pH 6.8) as per compendial method.

Benefits

- Prevents and protects the medicinal and nutraceutical substance from degradation in the stomach and releases them into the proximal small intestine (pH≥5.5), ready for absorption.
- Improves patients' acceptability and tolerance by preventing nauseatic feelings on oral administration, a common issue with various natural products.
- Protects the oesophageal and gastric mucosa from ulcers and harmful effects of strong active ingredients and nutraceutical agents.
- Based on plant origin material, generally regarded as safe with a safe-use history.

- Platform technology that can be applied to a variety of dosage forms (tablets, pills, capsules, granules, pellets etc).
- In principal any medicinal agent or nutraceutical can be encapsulated into the technology.

Applications

- Nutraceutical industry
- Pharmaceutical industry
- Traditional and herbal medicines
- Food supplements and natural products

Opportunity

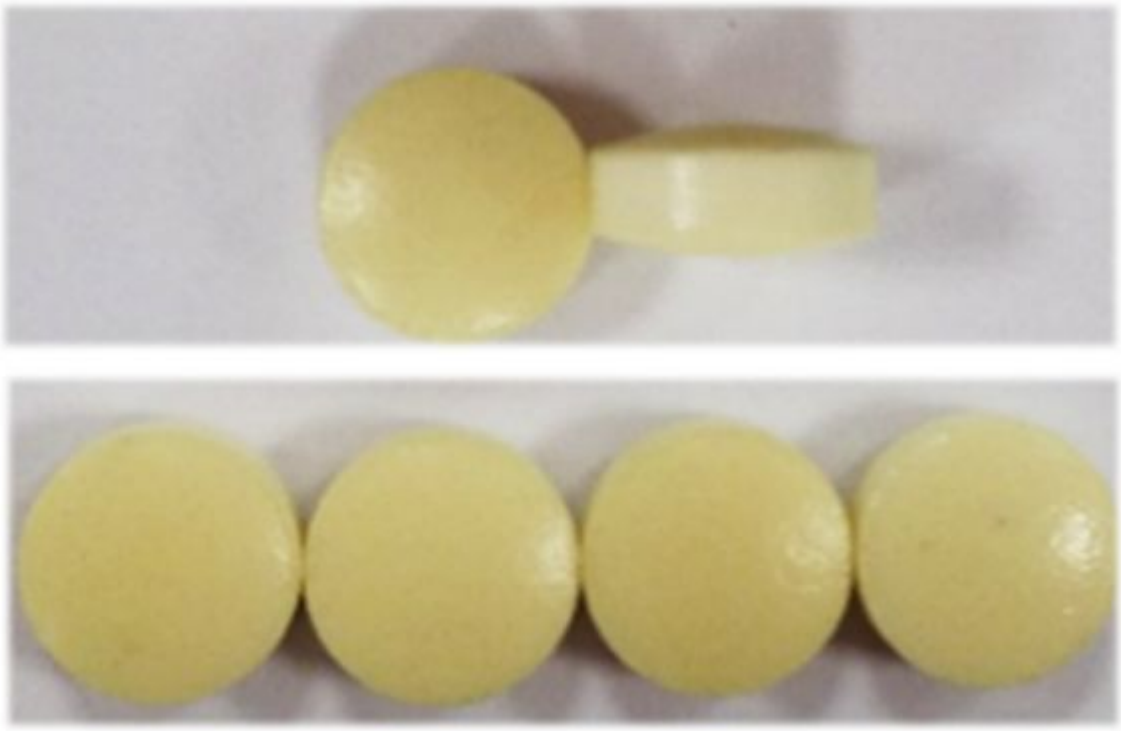
- Ready for licensing
- Available for product specific development and scale-up support

Patents

- British Patent Application No. 2009780.4

Appendix 1

Figure 1. Tablets coated with novel natural polymeric films.



Appendix 2

Figure 2. Ionisation behaviour of the novel polymeric material over a range of pH

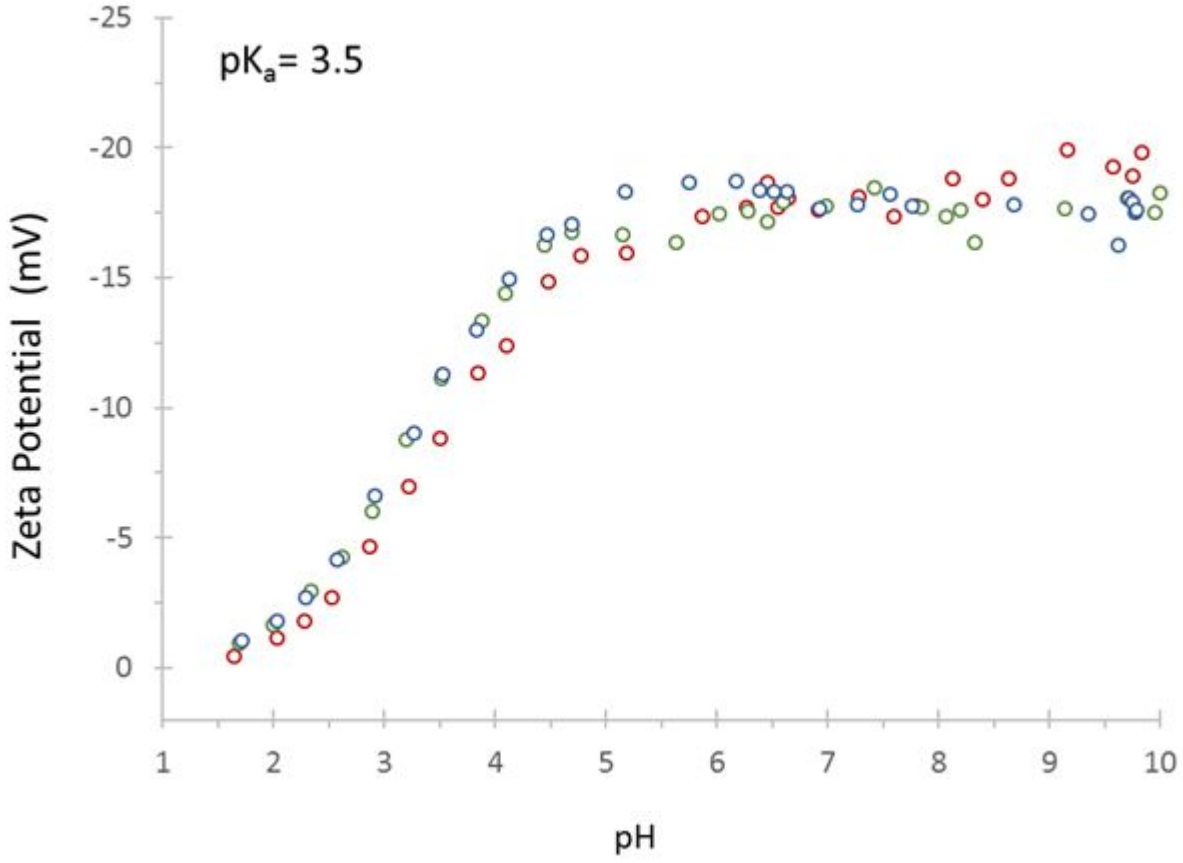


Figure 3. Active substance release (%) over time in simulated gastric media (pH 1.2) for 2 hours followed by simulated intestinal media (pH 6.8) as per compendial method.