Functional food that tastes good

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Since 2004, Emulsar has been making a place for itself on the emulsion food market with a technology that is both tasty and reduces the need for additives. Thanks to EU support under Horizon 2020, the company is now hoping to tap into the medical food sector to the benefit of patients suffering from obesity, diabetes, cancer, Alzheimers or malnutrition.

'Oral nutritional supplements' (ONS) are one of the key weapons in the fight against disease-related malnutrition—an issue that represents a financial burden of EUR 120 to 170 billion for the EU. Among diabetes patients, for instance, 50 % take such supplements—but often not happily. Taste is one of the biggest challenges facing functional food, and overcoming it could drastically increase compliance with treatment.

Created in 2004, Emulsar has developed and patented a smart emulsion

technology called SENT, which provides better protection, stability and controlled release of active substances without compromising on taste or relying heavily on additives. SENT has been industrialised since 2012 and has now inspired a new concept of high-protein ONS which addresses taste issues while increasing efficiency.

Frédéric Arnaud, co-founder of the company, details the future plans of the company and the results from his recently completed project GWAFH (Give the world appetite for health) funded under phase 1 of the H2020 SME Instrument.

Can you tell us more about your emulsion technology? What makes you think it has so much potential?

Emulsar's SENT is based on a new technological and manufacturing paradigm for the production of emulsions, based on nano-porous membrane emulsification. This process offers unique advantages over existing emulsion technologies: the droplets produced are 10 times thinner, with better-controlled droplet size and improved homogeneity. Lower thermal and mechanical stresses also mean that fewer additives are needed to produce stable emulsions.

Market demand for food with fewer additives is indeed growing, but at the same time consumers refuse to compromise on taste. How do you meet these requirements?

Poor taste is one of the main criticisms heard about functional food, and undoubtedly the major reason for poor consumption and observance of intake prescriptions.

SENT technology has already allowed us to bring Light Oil to market—for better-tasting, low-fat dressings, sauces, spreads, butter and margarine. Water droplets are finely dispersed and concentrated in the

oil, meaning that they are literally hidden inside the oil phase and do not destabilise in the mouth (thus remaining unperceivable). When Emulsar Light Oil is used in low-fat dressings, for example, they have the same taste as full-fat dressings, without the pasty taste of the thickeners.

What have you learned from the EU-funded feasibility study with regards to the market potential of your production process?

Our phase 1 work revealed one specific area in the functional food market where SENT can create extremely high disruptive value: medical food, and in particular ONS.

These formulated foods are designed to meet patients' nutritional deficiencies during illness, but bad taste and the large portions required in each meal induce very low levels of treatment compliance, dramatically limiting ONS effectiveness. Currently the market can only rely on techniques that make it difficult to add extra proteins without making the mixture unpalatable (texture becomes overly thick and proteins have an unpleasant taste).

What we found out with phase 1 is that our technology applying water-in-oil emulsion could successfully be adapted to significantly increase protein density (thus effectively reducing volume by at least half) while masking the unpleasant taste and texture of proteins. The aim of our project is to bring to the market a disruptive protein ingredient—Protein Plus—for ONS manufacturers, which overcomes this technology gap.

What can the benefits of your products be for someone suffering from diabetes? Do you have scientific evidence of these benefits?

Current treatment recommendations for diabetes are based on lifestyle modifications and incremental drug therapy. But these can be ineffective when diabetes is compounded by malnutrition, which is highly prevalent

in diabetic patients.

To prevent this, patients with diabetes are prescribed 'medical foods' or ONS, which have been proven to reduce mortality rates, shorten hospital stays and decrease hospital readmissions. But unlike in other types of ONS—that contain sugar to mask the taste of the protein and can therefore contain more of it—manufacturers of ONS for diabetics have to replace sugar with sweeteners. The protein taste is more present, and its quantities have to be reduced to keep the product edible. So not only is there poor compliance due to taste, but these ONS are also less efficient.

Our technology will concentrate these proteins while masking their unpleasant taste. We have already demonstrated, at lab scale, that applying SENT to proteins results in a protein-dense ingredient that makes it possible to reduce current ONS volumes by half while maintaining the same protein content and masking its unpleasant taste and texture. At the end of 2016 we will start a clinical study to gather scientific evidence on the benefits of our approach.

Have you already identified potential customers, notably overseas?

The ONS market is dominated by European and American players: Nutricia (Danone), Nestlé Clinical Nutrition, Fresenius Kabi and Abbott Nutrition, and thanks to the interviews conducted under phase 1 most of these companies have already requested to meet us.

Can you tell us more about your strategy for the months and years to come?

For Emulsar, the prospect of switching from nice-to-have applications (convenience food) to must-have applications (ONS) constitutes a huge market opportunity, creates commercial value and boosts our growth.

We will move from a low-tech to a high-tech sector, from a mature and saturated market to one that is fast growing, and also from a fragmented market to one that is dominated by a small number of major players. By working with these companies we can see our ingredient rapidly deployed across a huge market base covering multiple countries.

Beyond ONS, our ultimate aim is to target the wider functional food market (food with added health benefits) and the wider mass-market of general food products. This will be made possible by the fact that we will have been able to demonstrate the added value of our technology within the most scientifically and technologically stringent market, thereby generating interest from players across the food industry.

Did you apply for Phase 2 funding? If so, what will you try to achieve with this additional EU support?

We completed the application for phase 2 in September; now we cross our fingers. These European funds will enable us to maximise the potential of our Protein Plus ingredient, validate the industrial process, establish clinical proof of improved ONS compliance and prepare for our market launch.

More information: GWAFH project website: www.emulsar.com/?lang=en

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