

HIGH-VALUE
NUTRITION

Ko Ngā Kai
Whai Painga

Targeting the gut microbiome: New technology for commercially viable synbiotics

Peter Brown, PhD – Innovation & Research Manager

Host Institution



Consumer interest in gut health

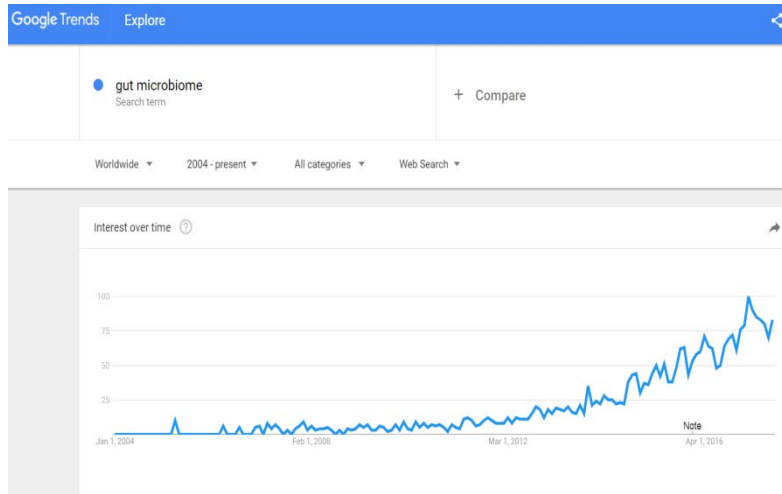
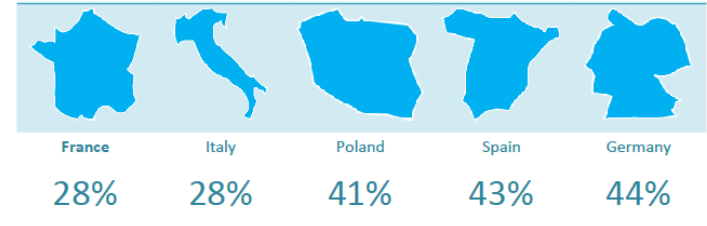


Table 1: internet users aged 16+ who have used functional food and drink in last six months²



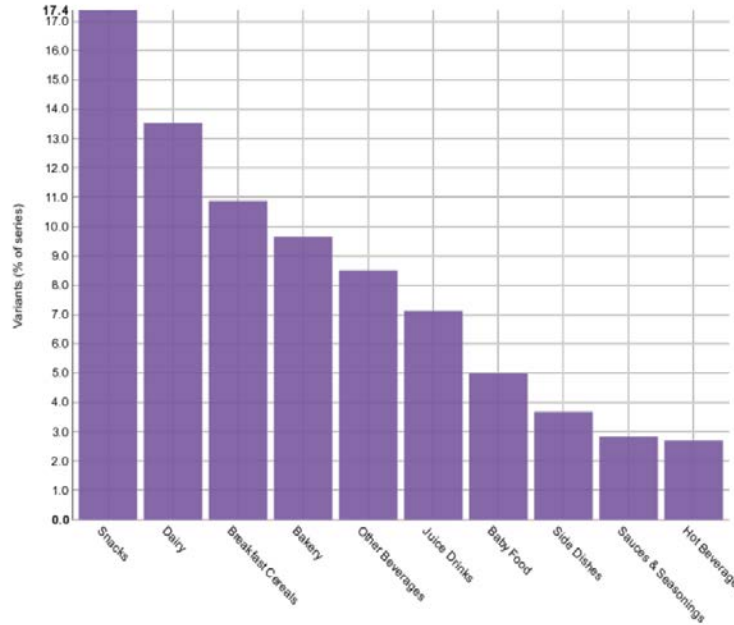
These consumers, looking for products to aid their digestive health, look for products containing dietary fibre, prebiotics, probiotics, and more recently, enzymes and resistant starch³.

In 2015 nearly 500 new product launches were made globally, making a digestive health functional claim with high/added fibre⁴.

HVN 2016 – Scanning the Horizon

Snacks targeted towards gut health

New product launches by category (6 months to June 2017)



All digestive health terms

HVN 2017 Update – Scanning the Horizon

Synbiotics – probiotics branching out into bakery to leverage prebiotic importance



- Use of *Bacillus coagulans*, with stability at high temperature processing and at ambient storage
- Some species within Bacillus genre are pathogens (e.g., Bacillus subtilis causes food poisoning)
- Low consumer understanding and lack of strong science to support digestive health
- Consequently *Bacillus coagulans* enriched products have not entered into mainstream.
- **The goal is to develop technologies to stabilise and use most trusted, researched probiotics (e.g. heat & storage sensitive lactobacillus and bifidobacterium strains in bakery / health snack related products).**

We set out to achieve...

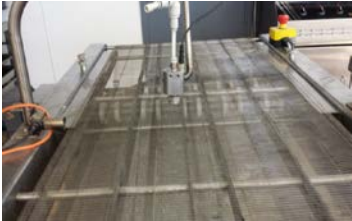
- Above 10^7 CFU/ml with commercially viable shelf life (ambient temp or chilled) for bakery / bread snack products
- No change in sensory compared to normal
- applicable to probiotic strains with consumer appeal / gut health science understanding
- no added excipients or thickeners
- simple and efficient manufacturing/storage/application
- must be achievable at large scale



Fast forward a few years of R&D....



Overnight fermentation using milk based composition with probiotic inoculant.

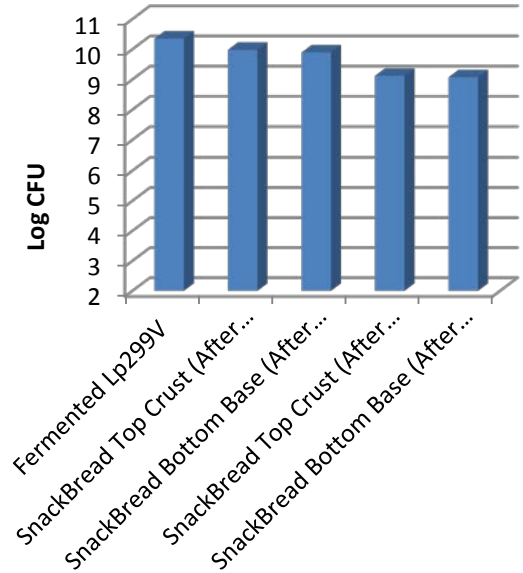
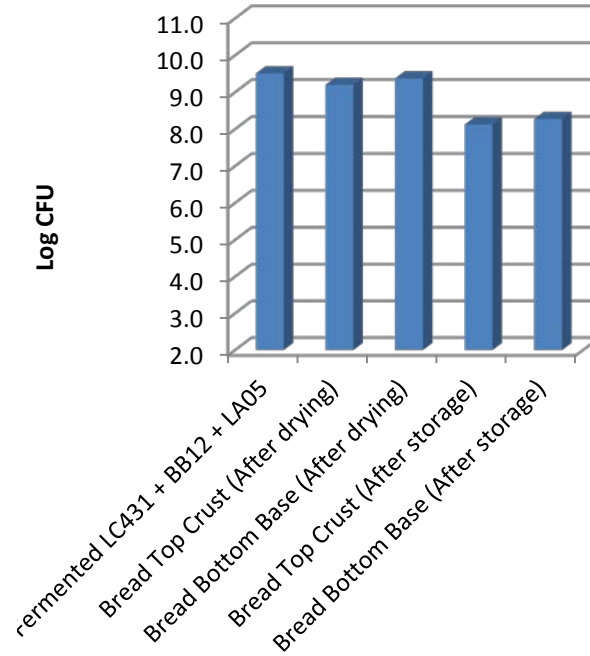
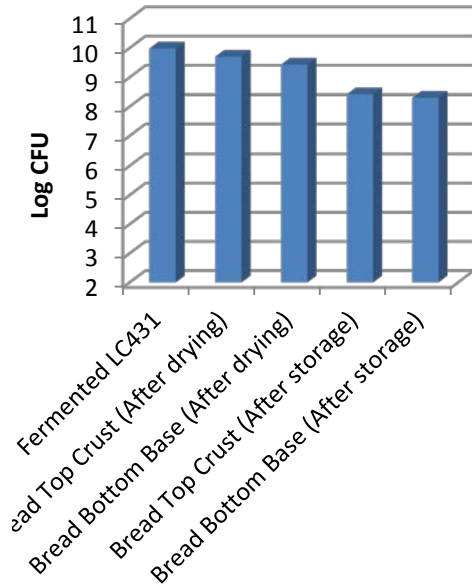


Direct spray application allowing thin layer application on bread post baking (about 1 ml per 2 slices of bread).

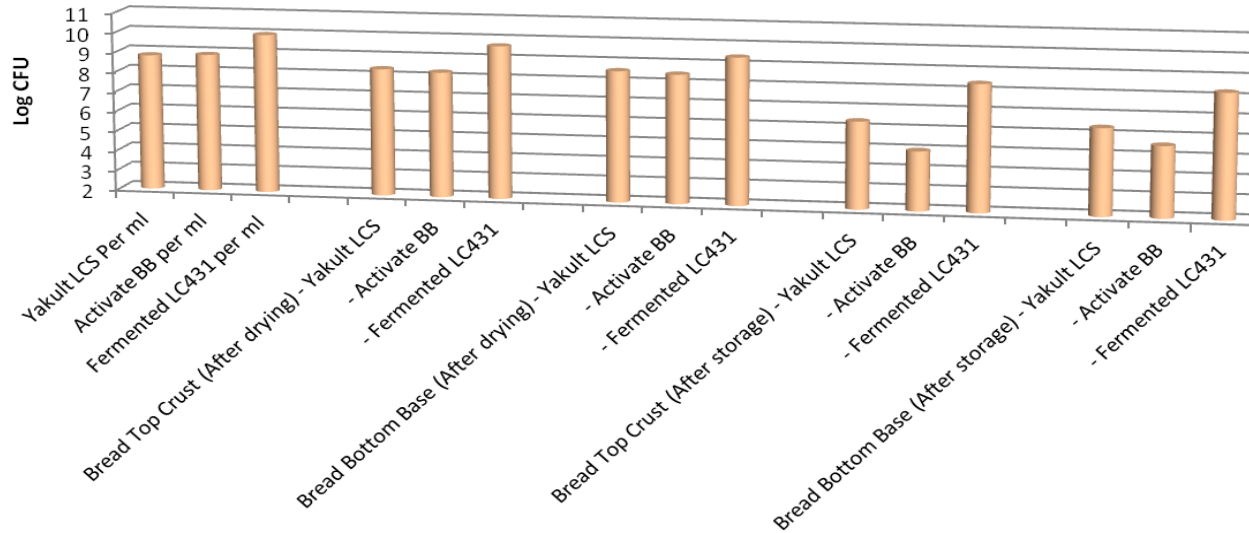


Drying at 50°C for 15 minutes.

Key outcomes – acceptable shelf-life, sensory and water activity levels



The added benefit of pre-fermentation



Key advantages and where to from here

- Applicable to probiotic strains of consumer and therapeutic relevance
- Acceptable stability of CFU (and similar CFU counts to Yakult)
- No change to sensory, water activity or shelf life
- Consumer focused, milk derived composition base
- Cost effective and convenient manufacturing process
- Strong patent coverage
- Growing interest in gut health
- Opportunities for targeting synergistic combos of pre- and pro-biotics as science evolves.
- **Now actively looking for**
 - **a partner or licensee strong in the health snack and/or probiotic space to take this to market, OR**
 - **science to help us leverage this technology to research-backed, specific gut health outcomes.**
 - **preference to keep a Kiwi story 😊**

