

PHARMACEUTICALS & NUTRACEUTICALS

Design of delivery systems for human and veterinary medicine



“We care about your success”

DNA Catcher S.L.

Pol. Ind. Mocholí · Plaza Cein Nº5, nave A8

31110 Noáin, Navarra (Spain)



“DNA CATCHER wants to be the best choice being competitive and flexible to help customers to deliver their products into the market”

“ABOUT US”

DNA CATCHER is an innovative Spanish company whose main objective is to improve the quality and performance of active ingredients using encapsulation technology in polymeric beads applied in:



Pharmaceuticals & nutraceuticals
Human and veterinary medicine



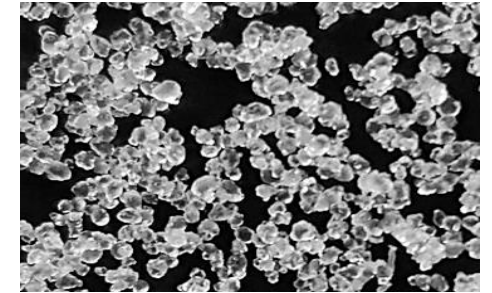
Food additives
Encapsulation of different type of food additives



Environmental health & odor control
Gas emission and bad odors neutralization



Flavors & volatile compounds
Enhancement of flavor performance in food matrices

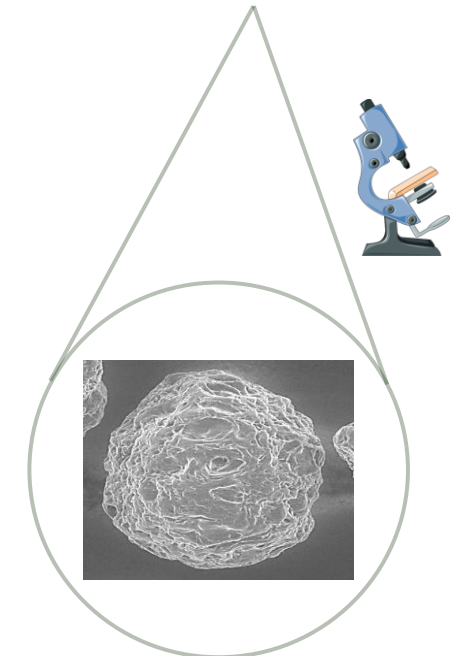


DNA CATCHER has developed their products based on **Patented Technologies** using safe, ecofriendly and Food Grade High density polysaccharides Beads (HDB-Technology) that fit to the market need with extensive application versatility.



PCT/EP2020/062573

- ✓ Easy to be manufactured at industrial scale with different sizes (0.2-2,000 μm).
- ✓ High capacity to load active molecules & microorganisms.
- ✓ Simple & standard equipment and techniques.
- ✓ Low cost Food Grade material.
- ✓ Avoiding the use of volatile organic solvents.



Team mission, vision, objectives and capacities



Multidisciplinary

Experience in multiple sectors



Specialization

Team with expertise



Creativity & innovation

Cutting edge technology



Environmental sustainability

Natural, biodegradable and biocompatible raw materials

- ❖ Assay and evaluation according to customer needs.
- ❖ Highly capable to solve problems related with stability, bioavailability, taste, compatibility, etc.
- ❖ Development of thermo, pH, and oxidation-resistant systems, which prevent the loss of volatile compounds.
- ❖ Lab scale manufacturing by high granulation and fluid bed dryer with top spraying (up to 5 kg).
- ❖ Freeze drying.
- ❖ Physiochemical assays, solubility and release studies, quality control.



BUSINESS MODEL

Make things easier: Value creation

R&D services
/contract research

“We will help you achieve your tech and market targets”



Product supply and out licensing of technology or final products



“Ready to cover your market need”

Co-development agreement

“We assume risks & love challenges with you”



Taste masking

Many drugs have an unpleasant taste, decreasing patient adherence to treatment.



Flo-Protect-HDB

- Easy incorporation technology using granulation and fluid bed dryer.
- Top spraying-fluid bed drying can also be used.
- Design of drugs loaded in granules or tablets.
- Taste masking technology is adapted for both hydrophilic and hydrophobic APIs.
- Fast release in stomach (acidic pH).

Probiotics stabilization & oral delivery

If probiotics are exposed to excess moisture, heat or pressure, they lose their health-giving effects.



Flo-Protect-HDB

- Enhances the shelf life of microorganisms and increases cell viability.
- Enteric coated granules or powder.
- Sustained or burst controlled release in the small intestine.
- Polymeric microbeads loaded with oils and microorganisms can also be used.

Oral delivery of nutraceuticals

Nutraceuticals must be stable and guarantee the right amount of bioactive substance to attain the physiological nutritious benefits.



Flo-Protect-HDB

- Enhances active stability, protection against oxidation and degradation at room temperature.
- Significant enhancement of the solubility in gastrointestinal fluids and enhancement of oral bioavailability.



Taste masking



Encapsulation technology to mask the unpleasant taste of hydrophilic and hydrophobic drug models

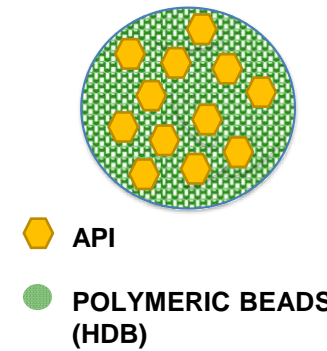
- Efficient drug – polymer inclusion.
- Adaptable process to use different types of resins if necessary.
- High shear granulation.
- Fluid bed drying.
- No need for filtration or purification steps.

Example: development of oral effervescent granules loaded with anti-histaminic and anti-microbial drugs.

Results:

1. Taste masking of 85% compared to free drug.
2. 30-40% of drug loaded in taste masking core.
3. Process yield: 92% using granulation and fluid bed drying.
4. Granules size: 400-600 μm (95%).
5. Humidity: 2.4%.
6. Release acidic pH: 100% within 4-5 min.

Taste masking core





Probiotics stabilization & oral delivery



Encapsulation technology to improve the dosage of microorganisms

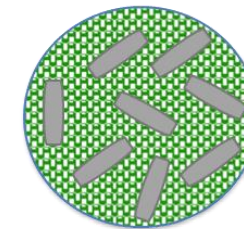
Example: Rhizobium encapsulation in HDB.



To test bacterial viability and survival, beads containing *Rhizobium spp strain mix*, which had been stored at 25°C, were broken down, the solution was diluted, plated out and the plates were incubated for 3 days at 30°C. After that, the bacteria were counted.

Results: incorporation of Rhizobium in HDB results in a higher bacteria viability even after 40 and 124 days at 25°C.

Formulation code	Bacteria load (log CFU/g)			Bacteria survival reduction after 40 days at 25°C	
	Initial	After 40 days at 25 °C	After 124 days at 25 °C	Logarithmic reduction (log CFU/g)	Bacteria reduction (%)
Conventional beads loaded with <i>Rhizobium spp strain</i>	8.16	5.66	nd	2.50	99.7
DB loaded with <i>Rhizobium spp strain</i>	8.03	7.95	7.63	0.08	16.7
Nd: not determined					

Probiotic core



-  RHIZOBIUM
-  POLYMERIC BEADS (HDB)

APPLICATIONS



Oral delivery of nutraceuticals



Encapsulation technology to improve the oral delivery of Turmeric Curcuma Extract (standardized 95% curcuminoids)

Example: Encapsulation of Turmeric Extract loaded in HDB. Oral administration of Curcuma loaded in HDB in Rats V.S. control suspension.

- A single oral dose of 2 mg/kg curcuminoids was administered orally.
- Total curcuminoids were assayed in blood samples/24 h.
- Assay: HPLC.

Results: Turmeric Extract in HDB increased the bioavailability of the main curcuminoid up to 124 folds more than control formulations.




Technology	R&D	Efficacy	Pilot study	Current state of art
Flo-Protect-HDB	✓	X	X	<ul style="list-style-type: none"> Ongoing development. Looking for partners for co-development, probiotics and nutraceuticals stockists, etc.

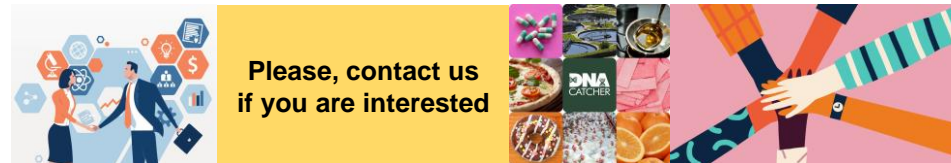


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 31110 Noáin, Navarra (Spain)

Technical and sales support

- Tel: +34 948 24 55 24
- lsanz@dnacatcher.com
- bdm@dnacatcher.com

 DNA Catcher
<https://dnacatcher.com/es/inicio/>



We are open to discuss collaboration, co-development or joint venture relationships with partners (out-licensing, manufacturing and supply)