

Technology Offer

CSIC/AH/055

Riboflavin-producing strains of *Bifidobacterium longum subsp. infantis*



Riboflavin-producing strains of *Bifidobacterium longum subsp. infantis* obtained through evolutionary adaptation to develop probiotics specific for populations with higher requirements of this vitamin, such as children, pregnant women, or the elderly

Intellectual Property

Material Biológico

Stage of development

Tested *in vitro*

Intended Collaboration

Licensing and/or co-development

Contact

Ana Sanz, PhD
Vice-presidency for
Innovation and Transfer
ana.sanz@csic.es
comercializacion@csic.es



Market need

Riboflavin-producing *Bifidobacterium* strains meet high demand by combining gut health with in situ B2 biofortification in fermented products for infants and adults. In preterm infants and babies, they reduce necrotizing enterocolitis by up to 73% and retain 59–85% of riboflavin to support immune maturation amid rising rates of preterm births. For vegetarians, the elderly, athletes, and pregnant women, they address global deficiencies that affect energy metabolism and mucosal health—the production has doubled to 9,000 tons per year—through cost-effective 10–20-fold increases in dairy, plant-based milks, and vegan products using non-GMO strains.



Proposed solution

The strains were obtained through evolutionary adaptation with roseoflavin (a riboflavin analog), and the mutations that increase riboflavin production have been identified. Their potential to ferment milk and a plant-based beverage (almond) in the presence of oxygen was evaluated, and HPLC analysis confirmed that the riboflavin content is higher in milk and exceeds that of commercial yogurts. In addition, they show high survival after simulated *in vitro* digestion, suggesting in situ vitamin production in the colon.

Competitive advantages

- Ability to ferment milk and an almond beverage in the presence of oxygen has been demonstrated, confirming that the riboflavin content is higher in milk and exceeds that of commercial yogurts.
- They tolerate O₂ and show high survival after simulated *in vitro* digestion.
- Biofortified foods with natural vitamins are a growing market, especially for populations with greater needs for specific vitamins.