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EIC INNOVATION PROCUREMENT PROGRAMME

ROKA CIRKLE®
case study

ROKA FURA DADA

with the support of covex

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PILOT: ROKA FURADADA S.L. & COVEX, S.A.

ROKA CIRKLE® (CIRKLE-LIGN) | Sustainable Chemistry and Pharmaceutical Manufacturing

140 kg	3.6 to 1	TRL 4 to 6	100% BIO
INDUSTRIAL BATCH PRODUCED	**HIGH PRODUCTION YIELD**	**TECHNOLOGY MATURITY JUMP**	**SUSTAINABLE FEEDSTOCK**
Shattered initial 30 kg target by 366% inside a certified pharma factory	3.6 grams of active ingredient produced from every 1.0 gram of raw lignin	Advanced from laboratory scale directly to validated industrial scale	Replaces petroleum synthetic chemicals with paper industry waste by-products

PILOT PROFILE

EIC Awardee: ROKA FURADADA S.L.

Solution: ROKA CIRKLE® (CIRKLE-LIGN)

Partner: COVEX, S.A. (Pharmaceutical Manufacturer, Spain)

Testing Ground: Certified Good Manufacturing Practice pharmaceutical industrial factory facility in Spain

Sector & Challenge Focus: Sustainable Chemistry and Pharmaceutical Manufacturing

The Challenge

The pharmaceutical, cosmetic, and sunscreen industries rely heavily on synthetic active ingredients derived from crude oil. These petroleum-based chemicals carry environmental risks, contribute to ocean pollution (such as coral reef damage from synthetic ultraviolet filters), and suffer from unpredictable supply chains. However, replacing synthetic ingredients with eco-friendly plant alternatives is difficult because natural compounds often struggle to meet strict pharmaceutical purity and stability standards during large-scale factory manufacturing.

The Solution

ROKA CIRKLE® is an eco-friendly biotechnology ingredient. It upcycles lignin—a natural plant compound produced as a waste by-product by the paper and pulp industry—into high-value active ingredients for skincare and pharmaceuticals. ROKA CIRKLE® acts as a natural antioxidant and Sun Protection Factor booster, replacing petroleum-derived chemicals with a safe, bio-based alternative produced under strict pharmaceutical safety standards.

Objectives

The pilot aimed to scale up production of ROKA CIRKLE® from small laboratory quantities (100 grams) to a full industrial factory batch (target of 30 kilograms) inside a certified pharmaceutical manufacturing plant. The partner wanted to verify chemical purity, batch stability, and production efficiency at commercial scale.

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Constrains

Manufacturing active ingredients inside a certified Good Manufacturing Practice (pharmaceutical quality standard) factory requires total chemical purity. The chemical engineering team had to strictly control solvent safety, ensure complete chemical reaction conversions across three synthesis stages, and guarantee full batch traceability without contaminating factory equipment.

Performance

The pilot exceeded all technical expectations. The team produced an industrial batch of 140 kilograms of active ingredient—shattering the initial 30 kilogram target by 366%. The manufacturing process achieved a high yield ratio of 3.6 grams of finished product for every 1.0 gram of raw lignin feedstock. The project successfully advanced technology maturity from laboratory scale (Technology Readiness Level 4) to validated industrial scale (Technology Readiness Level 6).

Partner Operational Improvements

Reduced carbon footprint of active ingredients, secured sustainable raw material sourcing, and established pharmaceutical-grade bio-based production protocols.

SUCCESSFUL PILOT VALIDATION

Having proved large-scale factory manufacturing, ROKA FURADADA and COVEX are establishing commercial supply contracts and licensing agreements to supply CIRKLE® to international skincare and pharmaceutical brands.

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