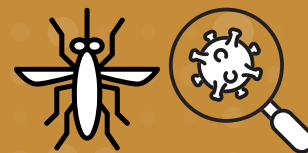




3F

Functional Fragrance Formulation



TECHNOLOGY DESCRIPTION

3F is a unique formulation of specialized ingredients (e.g. terpenes) from botanical sources with demonstrated effect as an insect repellent and an antimicrobial.

3F Mosquito Repellent

3F repellent contains botanical ingredients that mosquitos avoid. These ingredients are scientifically proven¹ to affect the mosquito's receptors, essentially making the insect blind to a human's presence. This can be utilized as a stand-alone repellent or as an additive in detergents, lotions, shampoo, and other substances to provide mosquito protection.

3F Antimicrobial

3F antimicrobial contains botanical ingredients known to kill viruses. These ingredients are scientifically proven² to inhibit viral replication. This can be utilized as a stand-alone antimicrobial or as an additive in detergents, lotions, shampoo, fabrics, and other substances.

PATENTS/INTELLECTUAL PROPERTY SUMMARY

Three independent composition and method patents are pending in the U.S. Two patents (separate formulations) support the mosquito repellent and one patent supports an antimicrobial application. Patent Cooperation Treaty (PCT) filings are ongoing.

MARKET OVERVIEW (SIZE, COMPETITION, TRENDS)

The global fragrance market is ~\$30B worldwide in 2020 with a CAGR of 3-5% through 2025³.

The global antimicrobial (viral) coatings industry generated \$4.0 billion in 2019, and is expected to reach \$11.6 billion by 2027, witnessing a CAGR of 13.3% from 2020 to 2027⁴.

Market size and growth rate will vary by repellent or antimicrobial application.

VALUE PROPOSITION/BASIS FOR DIFFERENTIATION

In lower concentrations, 3F formulations potentially can be used to achieve similar or improved repellent and antimicrobial results in commercially available products. Additionally, the formulations are non-toxic and emanate an attractive scent.

Repellency testing demonstrated the prevention and limitation of mosquito bites. Testing was completed at 1, 2, 6, and 8-hour intervals⁵.

Antimicrobial formulations were effective at low concentrations against:

- E. coli and Methicillin-Resistant Staphylococcus aureus (MRSA) *in vitro*.
- Both avirulent and virulent strains of Mycobacterium tuberculosis (M. tb) *in vitro*.
- COVID-19 *in vitro*.

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PRODUCT DEVELOPMENT STATUS

Contingent on regulatory approval, the three formulations have been characterized and are now available for development and/or as material additives to manufacturing processes. Order lead times are contingent on formulation and quantity.

FINANCIALS

The three formulations are available for immediate use in product development and/or manufacturing. Time-to-market and time-to-revenue are contingent on target claims, development time, manufacturing, and legal and regulatory requirements.

POTENTIAL AGREEMENT STRUCTURE(S)

3F is available for worldwide licensing, joint venture, co-development, and/or commercialization agreements.

COMPANY SUMMARY AND CONTACT INFORMATION

Impact BioMedical, Inc. is a wholly-owned subsidiary of Document Security Systems, Inc. and drives mission-oriented research and development that addresses unmet needs in human healthcare.

Impact BioMedical, Inc. has worldwide rights to 3F technology and is seeking partners to develop and/or commercialize this technology.

For more information:

<https://www.impbio.com>

<https://www.dsssecure.com>

Contact:

Mark Suseck

Chief Business Officer

Impact Biomedical, Inc.

+1 908 310 2613

MSuseck@impactbiomedinc.com

^{1,2} Source: *Company Data on File*

³ Source: *Edelweiss Investment Research, 2018*

⁴ Source: *Allied Market Research, 2020*

⁵ Source: *Company Data on File*