

# Revolutionary Breakthrough - Insulin created from Black Soldier Fly at Half the Cost of Synthetic Insulin

*Patented Green Extraction Technology Transforms Black Soldier Fly Waste Into Pure Insulin at 50% of Synthetic Insulin Cost*

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This harmless humble fly will change the world

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Half-price natural Insulin is finally within reach, thanks to generational scientist and thought leader, Dr. Abhinav Chauhan.”

*Stephen Nice*

REVOLUTIONARY BREAKTHROUGH: Dr. Abhinav Chauhan's Green Extraction Technology Transforms Black Soldier Fly Waste Into [Insulin](#), Chitosan, [Melanin](#), and other High-Value Pharmaceutical Biomaterials  
Promecens Entosystems Partners with Shield Nutraceuticals' Chitosan Global Division to Commercialize Game-Changing Sustainable Biotechnology Platform Worth \$150+ Billion Market Opportunity  
PUNE, India / JOHNSON CITY, TN – January 1, 2026 – In a

groundbreaking development that could revolutionize multiple industries, Dr. Abhinav Chauhan of Promecens Entosystems Private Limited has successfully developed and patented an innovative green extraction technology that transforms Black Soldier Fly (BSF) into five highly purified, commercially viable biomaterials: pure insulin, cordycepin, 99.9% pure eumelanin, antimicrobial peptides, and advanced chitosan.

This breakthrough technology, incubated at the prestigious CDFD Technology Incubator under the Department of Biotechnology, Government of India, represents the world's first industrial-scale, environmentally sustainable method for extracting these high-value compounds from insect biomass using green chemistry principles.



#### STRATEGIC U.S. PARTNERSHIP ACCELERATES GLOBAL COMMERCIALIZATION

Shield Nutraceuticals, Inc. of Johnson City, Tennessee, led by Steve Nice, has established Chitosan Global as the official U.S. marketing arm of Promecens Entosystems. This strategic partnership positions the revolutionary biomaterials technology for rapid commercialization across North American markets.

"We recognized immediately that Dr. Chauhan's technology represents the most significant breakthrough in sustainable biotechnology we've encountered," said Steve Nice, President of Shield Nutraceuticals and Chitosan Global. "The purity levels and cost advantages are unprecedented, positioning these materials to capture significant market share across pharmaceutical, electronics, and agricultural industries."

#### MARKET-DISRUPTING INNOVATION ADDRESSES GLOBAL CHALLENGES

The technology addresses critical supply chain vulnerabilities and sustainability challenges across pharmaceutical, biotechnology, electronics, and agricultural industries with a combined total addressable market exceeding \$150 billion by 2030.

"This is not just an incremental improvement—it's a paradigm shift that transforms agricultural waste into pharmaceutical gold," said Dr. Abhinav Chauhan, Founder and CEO of Promecens Entosystems. "Our patent-pending green extraction process achieves unprecedented purity levels while reducing production costs by 60-85% compared to synthetic alternatives, all while maintaining complete environmental sustainability."

#### FIVE BREAKTHROUGH BIOMATERIALS WITH IMMEDIATE COMMERCIAL APPLICATIONS

##### 1. Pure BSF-Derived Insulin

- Market Impact: Addresses the \$41.8 billion global insulin market with 70-85% cost reduction
- Applications: Diabetes treatment, cultivated meat production (reduces cell culture media costs by 95%)
- Advantage: Enhanced thermal stability crucial for developing countries

##### 2. Pharmaceutical-Grade Cordycepin

- Market Impact: Targets the rapidly growing \$98.3 million cordycepin market (CAGR: 8.1%)
- Applications: Cancer treatment (Phase II clinical trials ongoing), antiviral therapy, anti-diabetic treatment
- Breakthrough: First commercial-scale extraction from BSF achieving pharmaceutical-grade purity

##### 3. 99.9% Pure Eumelanin

- Market Impact: Premium positioning in the \$2.1 billion melanin market (CAGR: 9.8%)

- Applications: Bioelectronics, organic semiconductors, cosmetics UV protection, medical devices
- Innovation: Superior to conventional melanin with thermal stability up to 350°C
- Currently Available: Through Chitosan Global with pricing at \$480-\$390 per gram depending on volume

#### 4. Advanced Antimicrobial Peptides (AMPs)

- Market Impact: Captures share of the \$2.2 billion AMP market (CAGR: 16.5%) by 2034
- Applications: Antibiotic-resistant bacteria treatment, food preservation, agricultural protection
- Critical Need: Addresses 35,000 annual deaths in US from antibiotic-resistant infections

#### 5. Medical-Grade Chitosan

- Market Impact: Targets the \$8.1 billion chitosan market (CAGR: 17.8%)
- Applications: Drug delivery systems, wound healing (FDA-approved applications), tissue engineering
- Performance: 90% drug loading efficiency with 72-hour controlled release

#### ENVIRONMENTAL AND ECONOMIC IMPACT

The revolutionary green chemistry approach:

- Eliminates toxic solvents traditionally used in biomaterial extraction
- Reduces carbon footprint by 70% compared to synthetic production methods
- Transforms agricultural waste into high-value products, supporting circular economy principles
- Achieves industrial-scale production with monthly capacity up to 4,000 grams for premium products

#### TIMING ALIGNS WITH MARKET ACCELERATION

The technology launch coincides with unprecedented market dynamics:

- Biotechnology sector recovery: Venture funding continued strong growth through 2025
- Natural biomaterials surge: Market valued at \$113.99 billion in 2024, projected to reach \$251.99 billion by 2031 (CAGR: 12.0%)
- Sustainability mandate: 30% of new skincare products in 2023-2024 incorporated natural melanin as UV protection

#### COMPETITIVE ADVANTAGES ESTABLISH MARKET LEADERSHIP

Dr. Chauhan's proprietary technology offers:

1. Patent Protection: Exclusive intellectual property rights secured
2. Scalability: Demonstrated industrial-scale production capabilities
3. Quality Consistency: >99.9% purity levels with batch-to-batch reliability
4. Cost Leadership: 60-85% lower production costs than traditional methods
5. Regulatory Pathway: GRAS status potential accelerates market entry

#### ADDRESSING CRITICAL GLOBAL HEALTHCARE NEEDS

The technology directly addresses several critical challenges:

- Antibiotic Resistance Crisis: AMPs show minimal resistance development
- Diabetes Epidemic: Cost-effective insulin production for global access
- Cancer Treatment: Natural cordycepin as adjunct therapy
- Sustainable Electronics: Biocompatible materials for next-generation devices

## FORWARD-LOOKING STATEMENTS AND MARKET PROJECTIONS

Industry analysts project the sustainable biotechnology sector will experience unprecedented growth, with the global biotechnology market expected to reach \$5.71 trillion by 2034. Dr. Chauhan's technology is positioned to capture significant market share across multiple high-growth segments.

## ABOUT PROMECENS ENTOSYSTEMS PRIVATE LIMITED

Founded by Dr. Abhinav Chauhan and incubated at Venture Center (NCL Innovation Park), 100, NCL Innovation Park, Dr. Homi Bhabha Road, Pashan, Pune - 411008, Maharashtra, India, and CDFD Technology Incubator, Hyderabad, India. Promecens Entosystems is a deep technology biomaterials company focused on sustainable extraction of high-value biomaterials from insect biomass using green chemistry principles. The company holds proprietary patents for revolutionary extraction technologies that transform Black Soldier Fly Larvae into pharmaceutical-grade compounds.

## ABOUT SHIELD NUTRACEUTICALS, INC. AND CHITOSAN GLOBAL

Shield Nutraceuticals, Inc., headquartered in Johnson City, Tennessee, is a leading provider of high-quality nutraceutical ingredients and sustainable biomaterials. Through its Chitosan Global division ([www.chitosanglobal.com](http://www.chitosanglobal.com)), the company serves as the official U.S. marketing arm for Promecens Entosystems. Chitosan Global represents Chitosan manufacturers from around the globe.

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This press release contains forward-looking statements.

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