

## Hot Start-ups: Armoring against allergies & infections

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The medical textile armor that we are talking about may as well be real and happening right now as you read this.

#### Global Issue

According to World [Allergy](#) Organization (WAO), about 20-30% of Indians suffer from one or more allergies. In fact, National Health Service (NHS), UK, states that 58% of allergies caused at homes are due to dust mites.

Adding to these woes is Healthcare- or Hospital-Acquired Infections (HAIs), which is a huge cost on the Industry. The global HAI market is valued at \$50 billion. Out of which, the US alone is worth \$20 billion. One in 3 deaths in the ICUs is because of infections.

About 90% of infections spread occurring in day-to-day life is via contact with soft surfaces which includes bed linens, pillow cases, scrubs, doctor jackets and others.

The global infection control market is estimated to reach \$16.7 billion by 2020, growing at a CAGR of 6.7% between 2015-20.

Dust mites are a common cause of Asthma in children. Dust mites alone are responsible for 70% of common allergies medically termed as Allergic Rhinitis, which serves as a trigger point for Asthma.

There is a close relationship that exists between fungus and dust mites, usually found on mattresses, bedding and furniture.

Fungus play an important role in the food chain of dust mites. It feed on dead skin and hair and releases its byproducts,

which are in turn fed by dust mites. Once the fungus is exterminated, dust mites starve to death.

Mattresses are a hot breeding grounds for germs and dust mites, and is one of the major routes through which infection spreads.

## **Birth Of A [Start-up](#)**

Bangalore-based InfectionShield (I Shield) Technology is the first biotech [start-up](#) to come up with anti-microbial textiles treated in a non-metal-based coating form, attacking both allergies and infections.

I Shield is involved in developing anti-infection and anti-allergy products and technologies by integrating specialized molecules onto different delivery mechanisms like textiles, electronics and paints among others.

"We are able to bring science, materials, textiles and build business around it," says Dr Anand Anandkumar, Chairman, I Shield Technologies. He is the CEO and founder of another [start-up Bugworks](#), and as well as one of the founders of Escape Velocity Accelerator (EVA).

Armed with this basis, the I Shield team came up with textiles treated with non-metallic substrates in the form of bed linens, doctors' jackets, face masks, pillows & pillow cases, uniforms for caregivers, food handling & military personnel.

Currently, the existing anti-microbial textiles in the market is metal-based, i.e., they are coated with silver, copper or zinc which act as antimicrobial agents.

But the process is expensive, and the products' potential leaches over time along with the depleting efficacy of the metallic coating.

"The metal-based textiles work on the principles of leaching. Their active ingredients efficiency drops over time. Also, their residues can be an environmental hazard. In fact, zinc and silver take time to get active after exposure to microbial agents. Silver, for example, takes about an hour," reveals Dr Anand.

## **Synergistic Background**

In 2014, Tirupur-based Shakthi Knitting Limited (SKL), a manufacturer and exporter of apparel solutions, spun-off its healthcare [start-up](#) SKL Medtech, with a mission to provide innovative healthcare solutions by offering medical and protective textiles. SKL Medtech is currently being accelerated at EVA in Bangalore.

EVA was founded in 2014 to accelerate innovative and promising [start-ups](#) in the Healthcare and Life Sciences spaces.

In 2015, EVA and SKL Medtech joined hands together to spin-off I Shield.

The [start-up](#) took 6-8 months for its entire R&D activities including designing and developing its products.

The [start-up](#)'s advisory board includes Prof S Ramaswamy, CEO of CCAMP & Dean of InStem; and Dr Shrikumar Suryanarayan, CEO of Sea6 Energy & former President, R&D, Biocon.

I Shield has a mix of talented professionals with extensive experience in biotechnology, manufacturing, technical textiles and material sciences.

The [start-up](#) now employs less than 10 professionals including the operations and sales team in Bangalore, and at the factory in Tirupur in Tamil Nadu.

## **Innovative Textiles**

I Shield's anti-infection linen is a premium grade cotton linen which has incorporated the company's technology onto it which actively kills infection causing germs and allergy causing dust mites.

The [start-up](#)'s anti-infection masks is a 4-layered product, where each layer contributes to a unique function.

The first layer is anti-bacterial and actively kills pathogens. The next layer is a N99 particulate filter which filters out 99% of the particulate matter.

The third layer contains a layer of activated carbon which reduces odors. The last layer is anti-bacterial made of cotton, which kills pathogens on the inside as valve.

In a hospital setting, doctors' white jackets have been reported to be a carrier of infections from one patient to another. I Shield's anti-infection jackets actively kill germs and controls the infections spread.

"We strongly believe that by controlling infections and allergies using products that consumers use on a day-to-day basis, we can improve the overall quality of life," comments Ms Aradhana Vohra, who heads I Shield's operations.

Today, hospital infections are increasing and consumer awareness has gained grounds.

"India is the diabetic capital of the world. Diabetics have higher chances of acquiring infections. Also, cancer patients, post their therapies, show a compromised immune system making them prone to infections," explains Dr Anand.

According to the company, the textile substrates are tested on various microscopic agents including bacteria, yeast, fungi, and dust mites.

The company has tested its products in Germany, Switzerland, Singapore and India for different bacteria, ensuring that the products' safety and effectiveness under different conditions.

The [start-up](#) intends to first bring its products to Bangalore. "We are looking at global markets as well since our products are global. We want to reach out to other international markets," adds Dr Anand.

I Shield has closed deals with Telerad RxDx (Bangalore), Lifeline Hospitals (Chennai) and a hospital in Kolar District.

Another operations team member Mr Prasanna Raviraj voices, "We are targeting the hospital and homecare segment which includes elderly citizens, diabetics, post-cancer therapy patients, young children, immuno-compromised patients, and consumers who just want to create a healthy environment for their children."

## **Fund Raising**

The seed money for I Shield was channeled together by EVA and SKL. Close to Rs 1 crore has been the investment in to the [start-up](#).

"We'll continue to be funded by both the entities. But this will change in the next 6 months. We'll be approaching external investors by showing them our traction," states Dr Anand.

The [start-up](#) intends to raise Rs 4-5 crore depending on its expansion agenda.

In terms of valuation, it aims want to touch \$200-300 million in the next 5 years.

## **Moving Ahead**

In a few months from now, Singapore and the US will be I Shield's prime markets for exporting its products.

"We want to engage with strategic partners in these geographies. First, we want to understand the markets well, ensuring our products get absorbed well. We also would focus on understanding the regulatory mechanisms of other markets - Japan - for example," observes Mr Prasanna.

While the allergy and infection awareness has started increasing, it is still in its early lift-off stage in India.

"We have a lot of work to do to bolster awareness and educating consumers. Getting the right sales team and training our sales force with our medical message will definitely be a challenge. The traction may take time. Funding too, will be a challenge. Building a credible Indian brand is quite rough because people are more skeptical when it comes to Indian

brands," Dr Anand points.

He also emphasizes that India has run out of antibiotics and it is now left to the body's immune system to fight infections.

"Drug-resistance in Bangalore can be up to 70 percent. Newer antibiotics will take time to happen. While we don't have antibiotics, what we can do is we can change our policies to prevent the abuse of antibiotics in the food and pharma industry. The Government should fund antibiotics research in the country which is a long-term solution. There must be newer policies preventing the sale of antibiotics and reduction of its use in foods," he urges.

In the future, the [start-up](#) expects every household to have an I Shield product, where its products become a standard to fight infections.

"A few years from now we'll discover new anti-microbial salts, newer ways of connecting those salts and materials; and making wood anti-allergic and anti-infectious along with other surfaces like doorknobs, tables and every surface that can be protected with safe materials," highlights Dr Anand.

Well, ask him what kills a biotech [start-up](#)? "If you don't execute your plans you are a dead meat! Plan execution and taking advantage of situations is crucial. If you have a product that is too ahead of the market, then all you do is create a platform for some big competitor. Most companies close because their products are ahead of markets. Funding and the rest are all secondary," he ends crisply.

### **I Shield's Technical Textiles:**

- ĩ,§ Bed Linen
- ĩ,§ Doctors' Jackets
- ĩ,§ Face Masks
- ĩ,§ Pillows & Pillow Cases
- ĩ,§ Uniforms for Caregivers, Food handling & Military personnel