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Nanobio garments for wellness

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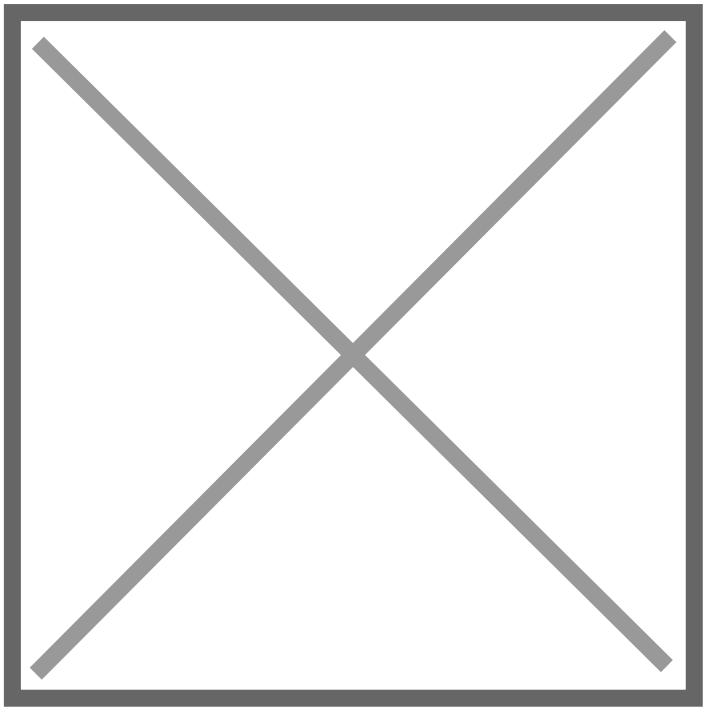

Nanobio garments for wellness

nanobio garments

These garments have anti-microbial, anti-allergic and moisture-retaining capacity and will be beneficial in case of infections and allergies. New-Delhi based Advantage Organic Natural Technologies is exploring the concept for the first time in India under the brand name Joy of Life and has obtained patent for the product.

Imagine, the clothes you wear are not only comfortable but also have healing and medicinal properties, thus providing a combination of comfort as well as wellness. Your imagination can now become a reality as 'Meditek' garments, a joint venture of Advantage Organic Natural Technologies (AONTL) and textile technologists from IIT, New Delhi, will soon hit the market.

Explaining the concept of ‘Meditek’ garments, Rajiv Rai Sachdev, managing director, AONTL, says, “These are 100 percent organic/ natural garments with wellness properties. The garments are coated with various herbs with medicinal and aromatic properties, healing crystals and natural bioengineering extracts.”

During heavy work-out, we generally perspire leading to the opening of pores, thus making us prone to external microbes. So, what can be the solution? The answer is the clothes made from chemically treated fabric that can purge the dirt.

“These garments will be very beneficial in case of infections or allergies, and even otherwise as they have antimicrobial, anti-allergic and moisture retaining capacity. AONTL, under the brand name Joy of Life, is exploring the concept for the first time in India and has obtained patent for the product,” adds Sachdev.

AONTL is setting up 'Meditek' garments manufacturing unit at Kandaghat in Solan district, Himachal Pradesh.

“The project has been approved under single window clearance policy of the state government and 16,000 sq.m. of land has been allotted. Construction work is going on and the facility is likely to start the production soon. “Until the company’s unit is complete, the products prototypes will be developed using other existing manufacturing processing units taken on lease and hire basis,” reveals Sachdev.

“AONTL has inbuilt clean development mechanisms that are 100 percent natural, eco-friendly, saves water, electricity and energy vis-a-vis conventional textile processing methods, and will earn carbon credits for the same,” says Sachdev.

Fusing technology with fabric

Some of the most renowned textile technologists of India, from the Department of Textile Technology, IIT, New Delhi, having vast experience in similar technological fields will jointly set-up a research facility in IIT, New Delhi, for enhanced research in similar technology applications. The outcome of the research, be it in the form of technology or products will be marketed by AONTL and the Department of Biotechnology (DBT) will be the funding agency.

The clothes will be coated with nanosilver particles, natural anti-microbials like chitosan, aloe vera and lemon green including healing crystals.

Speaking about the nature of collaboration of IIT, New Delhi, with Advantage Organic, Dr ML Gulrajani from of the Department of Textile Technology, IIT, New Delhi, says, “The company has been incubated at IIT, New Delhi, which provides various technological assistance to the company to ensure perfection at the pilot scale and will subsequently scaleup for regular production. IIT will provide the technologies and other technical support in setting up the production facility and marketing activities.” On the use of the nanotechnological and biotechnological applications and their utilization in making the final product of Advantage Organic, Dr Gulrajani says, “Various combinations of bio and nanotechnologies with wellness properties are being used in the production of garments.”

Further speaking on the nanotechnological applications in textiles, Dr Gulrajani says, “Nano-silver is also finding considerable use in the treatment of textile products like socks to make them odorless that inturn demands less frequent washing thereby making them more sustainable. A combination of nano-silver and chitosan will make it an effective value-added multi-functional finish.”

“The nano-silver when in contact with bacteria and fungus will adversely affect cellular metabolism and inhibit cell growth. The nano-silver suppresses respiration, basal metabolism of electron transfer system, and transport of substrate in the microbial cell membrane. The nano-silver inhibits multiplication and growth of those bacteria and fungi which cause infection, odour, itchiness and sores.” Dr Gulrajani adds.

The range of Meditek garments that will be launched soon include yoga wear, hospital clothing and kids wear.

Activities of AONTL in IIT, New Delhi

- Optimization of enzyme processing of textiles.
- Establishing procedures for extraction and application of herbal dyes with known medicinal properties.
- Effect of enzyme finishing on the herbal dyed textile products.
- Development and application of special nano finishes based on natural ion generating minerals having healing properties.
- Formulation and application of finishes based on complexes of natural bio-molecules such as chitosan and sericin with silver nano-particles.
- Evaluation of anti-microbial activity of natural plant extracts on textile substrates, such as aloe vera and lemon grass oil.
- Micro-encapsulation of natural herbal oils with natural polymers and their application on textiles.

Nanobio applications in developing wellness products

- Processes for the scouring of organic cotton yarns and garments at pilot scale with enzymes namely, pactinases, cutinases and combination of these enzymes with lipases.
- Technology for the production of purified natural herbal extracts (colorants) using membrane filtration and spray drying.
- Processes for application of purified natural herbal colorant extracts to cotton yarns and garments in a pilot processing plant to get uniformly dyed products.
- Standardization of the bio-finishing processes for natural dyed garments with various types of cellulases having different proportions of endoglucanases with minimum cellobiohydrolase activity.
- Technology for production, formulation and application of finishes based on complexes of natural bio-molecules such as chitosan and sericin with silver nano-particles. Application of finishes based on complexes of natural bio-molecules such as chitosan is a natural polymer available as by-products. The polymers can act as handle modifiers with added properties as anti-microbial, UV protection and cell rejuvenation.
- Technology for production, formulation and application of finishes based on natural plant extracts on textile substrate such as aloe vera, lemon grass, and neem. Currently, most of the anti-microbial agents used in textile industry are synthetic products such as Triclosan 5-chloro-2-(2,4-dichloro phenoxy)– phenol, Aegis Microbe Shield (3-trimethoxysilyal- propyl-octadecyl-ammonium chloride), Purista poly (hexamethylene biguanide hydrochloride) etc.

- Technology for the production of nano-particles of ion generating minerals such as tourmaline, Himalayan rock and quartz and the application of these on garments so as to get durable negative ion generating finishes. Application of special nano-finishes based on natural ion generating minerals having healing properties. The company is proposed to develop and evaluate textile finishes based on nano-particles of pyroelectric tourmaline, quartz, Himalayan salt rock and other such minerals. The finish will be developed by embedding the nano-particles of tourmaline in a polymer emulsion that will be used as finish.
- Processes for micro-encapsulation of natural herbal fragrances and other functional molecules in natural bio-polymers and their cross-linking with cotton garments.

Rahul Koul in New Delhi