Amicrobe Herboceuticals - Therapy by nature

Vision of Founders

We (Dr. Shivakalyani Adepu and Dr. Mudrika Khandelwal) are researchers at IIT Hyderabad whose interdisciplinary approach to target the prevalent infections, specifically fungal infections in women, have led to a powerful technology. We have received a BIRAC biotechnological ignition grant to take the technology to prototype, as a result of which we have pre-incubated with the support of i-TIC. We are committed to improving the quality of life by modern material scientific intervention developing on the common Ayurveda knowledge.

We are living in a world where Allopathic antimicrobial drugs are ruling the healthcare system given the increasing incidence of infections. Although allopathic antimicrobial drugs have proved to deliver definite pharmacological action, nevertheless they are associated with the drug resistance and side effects too. The ancient Indian Ayurveda has a plethora of antimicrobial drugs which can help to cure ad mitigate most of the infections with least resistance. However, no product based on herbal drugs exists in the market which is substantially equivalent to allopathic formulations (tablets, syrups etc). This is because the herbal medicines are sensitive to light, moisture, pH and environment and their bioavailability is very limited.

Hence, our vision is to design and develop safe and efficacious ancient Indian ayurvedic medicines into a modern formulation system by materials intervention which can resolve the problems associated with the stability and bioavailability of herbal drugs.

We aim at developing the herbal antimicrobial products (anti-bacterial and anti-fungal) focused on the prevention of infections in day to day life. We are at TRL3-4 and would like to work for developing various possible products (feminine hygiene, aerosol sprays & transdermal patches) to get into the market and serve the society for the betterment of their health.

Technology developed by the startup

Fungal infections are prevalent, and in particular, its infestation as Vaginal Candidiasis in women is quite prevalent. These infections not only make a presence at work and travel uncomfortable for women but also sometimes cause them to drop from their careers. The treatment of the infections involves ointments and suppositories. These forms of medications require frequent applications given the low residence time. This makes fungus slowly resistant. Another similar scenario is that of an athlete's foot or soldier's foot where the foot is covered in a moist and warm environment for a prolonged period. Both of these situations need a solution that provides active protection and mitigation. We intend to target the former issue on priority.

The product we are working is a pantyliner that is incorporated with herbal microcapsules to impart antifungal activity. The liner would offer sustained release of oils for about 8 hours. 8 hours is the maximum duration of usage of a pantyliner, while at work or travelling. The usage of these pantyliners would prevent the infection and contain the existing. Further, these microcapsules can also be incorporated into various cosmeceutical products for preventing infections.

Our product/technology adds value in the following ways:

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1. There are no other pantyliners in the market which offer or claim antifungal activity, although fungal infection is the major class of infection in women.
2. Our formulation of essential herbal oils would expand the utility and efficacy of these known antimicrobials (including antiviral which has gained importance due to the pandemic).

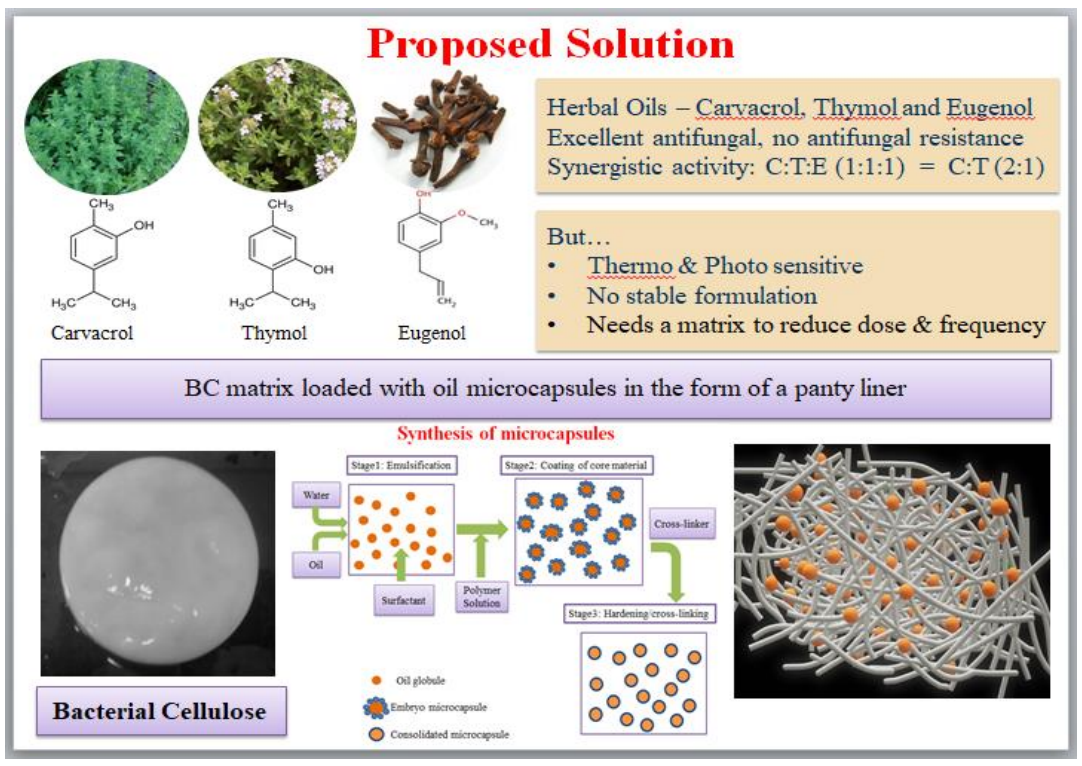

Figure 5: Proposed Solution by **Amicrobe Herboceuticals**

Detailed Technology

Our technology (for which we have filed the patent) is a modern delivery formulation of herbal antimicrobials essential oils derived from Tulsi, Oregano, and Clove. We were able to achieve a very high-efficiency microcapsule with an encapsulation efficiency of over 85% and a narrow size distribution. This required rigorous optimization. A coacervation phase separation method was used where droplets were stabilized in water and a polymer was used to create the shell, leading to microcapsule formation. These microcapsules can be either directly used as sprays or incorporated into a carrier matrix for a double barrier release, depending on the application. The qualitative and quantitative antifungal activity has been performed to prove the efficacy better than commercially available antifungals.

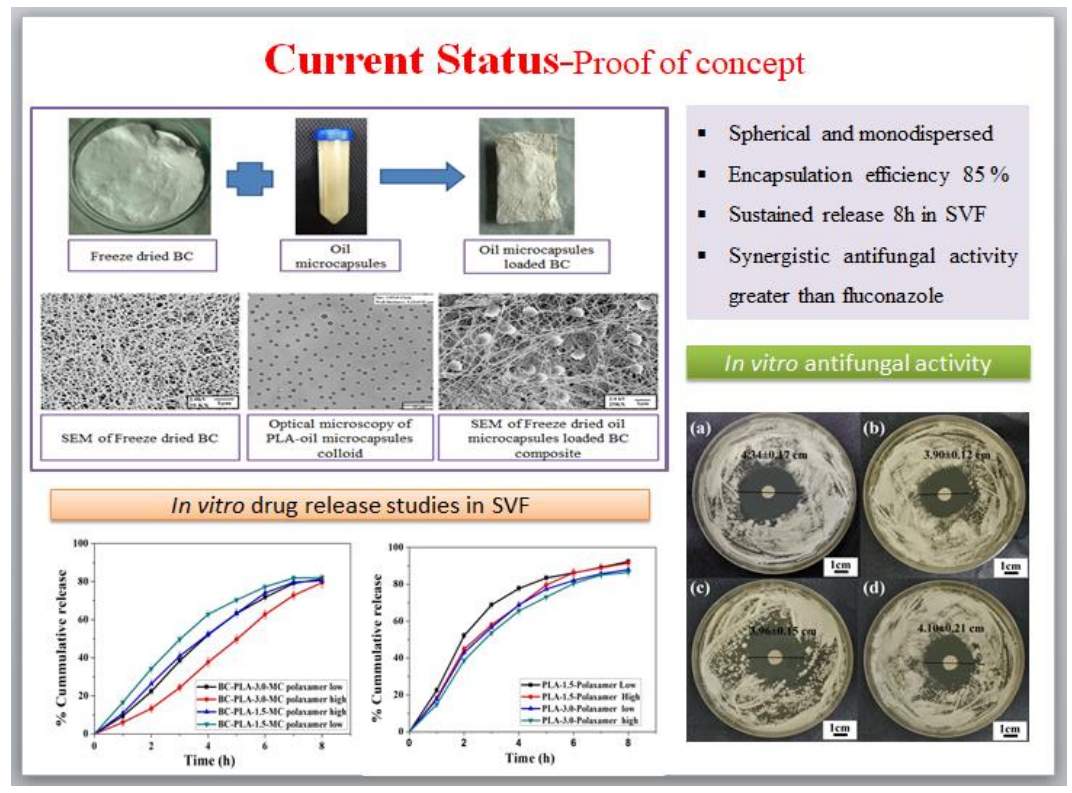

Figure 5: Current Status (Concept Proof) by Amicrobe Herboceuticals

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