

BIOCHEM show case

Develop alternative sources of latex

Problem

Over 10 million tonnes of natural rubber is used every year globally. Hevea (the Brazilian rubber tree, *Hevea brasiliensis*) is the primary source of natural rubber (latex) on a commercial scale. Demand for rubber material is increasing but productivity of rubber plantations is not meeting demand with the effects of extreme weather in South Asia, where the majority is produced, and affecting crops.

Synthetic rubber petroleum-based has grown more expensive as oil prices climb. In many applications, synthetic rubber cannot substitute natural rubber due to lower performance.

Technical solution

Guayule (why-you-lee) is a desert plant indigenous to the southwest United States and northern Mexico. The species (*Parthenium argentatum*) has been developed as a commercial source of latex by Yulex with proprietary commercial farming, harvesting and biotech programs that have increased the plant's latex yields with faster growing cycles to produce more product for the medical, building, and energy industries.

The guayule processing technology includes methods for latex extraction and product refinement. The technology involves homogenizing the entire hedged guayule plant. Rubber is found primarily in the bark and must be released in the processing. Branches are ground into a "guayule milkshake" by gently breaking open the cells in the plant, releasing intact rubber particles and creating an aqueous suspension. The suspension is then placed in a centrifuge for separation. Since the guayule rubber particles are lighter than the aqueous solution, they are separated from the suspension. The rubber portion of the mixture is culled of the top (much the same way that cream is skimmed of milk) and purified into latex.

Benefits

Guayule

- Grows in a desert climate
- Requires less water than industrial crops such as cotton
- Matures for harvest in 12-20 months (compared with 5-10 years for Hevea-based rubber)
- Is free from the tropical allergenic proteins contained in the tropical, or Hevea, latex (clinical data suggests guayule latex contains no “super sensitizing” proteins like those in Hevea, or peanuts for example) thus avoiding latex allergy reactions

Yulex natural rubber, derived from guayule, also meets the high performance standards based on its natural elasticity, tensile strength, barrier protection, durability, and elongation characteristics necessary for many medical, industrial and military applications.

Additional information

Yulex website

<http://www.yulex.com/home/>