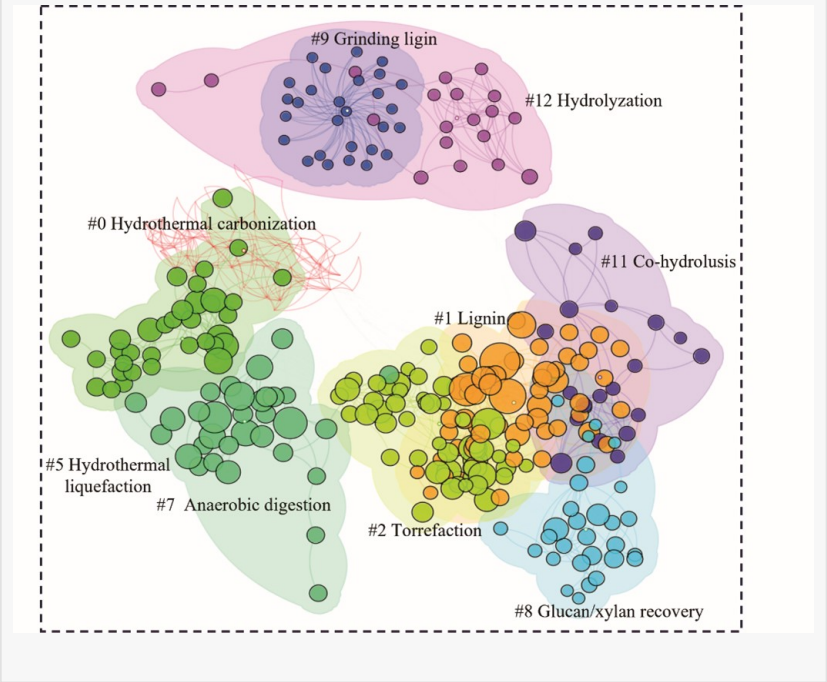
New Research Sheds Light on Furan Fatty Acids in Rubber Tree Latex

Unlocking the Potential of a High-Value Co-Product in Natural Rubber Production



NANJING, CHINA, March 4, 2025 /EINPresswire.com/ -- This research investigates the presence of furan fatty acids in the latex of 48 Hevea brasiliensis genotypes, revealing significant variability and potential health benefits. The findings suggest new opportunities for sustainable rubber production and improved economic value.

Natural rubber, primarily sourced from the latex of Hevea brasiliensis trees, is a crucial global commodity used in various industries. In recent years, scientists have discovered furan fatty acids in latex, known for their potential health benefits, including anti-inflammatory properties and reduced cardiovascular risk. However, the presence and variability of FuFA across different genotypes had not been extensively studied until now.

The study, titled "Shedding light on the existence of Furan fatty acids in latex lipids across a wide diversity of Hevea brasiliensis genotypes," analyzed the latex of 48 genotypes from around the world. The results showed that FuFA exists in all samples, with concentrations ranging from 0.01% to 0.71% (w/w in latex). Notably, genotypes from breeding programs in Côte d'Ivoire, Malaysia, and Vietnam exhibited the highest FuFA content.

Researchers used advanced techniques, including lipid extraction and gas chromatography, to measure FuFA levels and other fatty acids. They found that FuFA content positively correlated with total fatty acid content when exceeding 0.1%, indicating an additive rather than substitutive role. Interestingly, linoleic acid (C18:2) and palmitoleic acid (C16:1) showed strong correlations with FuFA concentration, suggesting possible biosynthetic pathways.

In terms of production potential, genotypes PB235, RRIV4, and IRCA41 demonstrated the highest yields of FuFA, ranging from 1,367 to 2,446 mg per tree per tapping. These findings suggest that selecting specific genotypes could significantly enhance FuFA production, adding economic value to rubber plantations.

The study also explored the genetic heritability of FuFA content, identifying genotype PB5/51 as a valuable parent for breeding programs. This finding could help optimize FuFA production in future rubber tree populations.
Overall, this research highlights the potential of furan fatty acids as a high-value co-product in natural rubber production. By leveraging genetic variability and optimizing breeding programs, rubber producers could enhance both economic returns and sustainability. Future work may focus on further elucidating the biosynthetic pathways of FuFA and exploring its potential health applications.

DOI
https://doi.org/10.1016/j.jobab.2024.12.002

Original Source URL
https://www.sciencedirect.com/science/article/pii/S2369969824000823

Huicong Cao
Nanjing Forestry University
02585426289
email us here