Sustainable Fufactive

Furanic acid F2 (FuFA-F2) from Hevea brasiliensis latex: Toward a transition to an ecologically responsible production of bioactive molecules in a society that sustainably manages its natural resources

ABSTRACT

Encourage the transition to an ecologically responsible production of bioactive molecules (from sourcing to the production process) in a society that sustainably manages its natural resources is fundamental. The presence of potential bioactive molecule, in important quantity, in the rubber tree fresh latex, appears as an opportunity to support and highlight this ambition.

Indeed, a significant presence of furanic acid F2 (10, 13-epoxy-11-methyl-octadecan-10,12-dienoic, FuFA-F2) was evidenced in the latex of the rubber tree, which represents approximately 0.4% w/v of the latex, meaning that one liter of latex has a potential production of 4g of FuFA-F2. This molecule belongs to a family of lipid called furanic acids (FuFA) which are found in fruits, vegetables, oils, butter, fish, and recently raised a strong scientific curiosity, in particular for their health benefits (e.g.cardioprotective effects, obesity). The new requirements of consumers more sensitive to the origin and production conditions, lead manufacturers to move towards natural products that respect the environment and health. For example, in foodstuffs, the clean label meets the expectations of consumers who want to know the origin and composition of products.

Concomitantly, the world production of natural rubber, derived from Hevea brasiliensis latex, is very important (13.9 million tons in 2018, source IRSG) and the Southeast Asia supplies more than 90% of the world production, with Thailand being the world’s top supplier. In addition, 85% of the rubber cultivation is carried out by smallholders on a few hectares’ plantation (

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GOAL

Recent studies (CIRAD-KAPI/KU) have made it possible to characterize the presence in significant amounts of FuFA-F2 in the latex of the PB235 clone of rubber trees. Although the early procedure for collect, extraction and purification, unveiled 4 a high concentration of FuFA-F2 (0.4% (w/v)) in the latex of a clone (PB 235), its production has to be better investigated. Therefore, beyond the latex collection

which is perfectly managed by the Franco-Thai team of CIRAD/KAPI, a better screen and investigation of the clonal variability on the FuFA-F2 production must be performed. In addition, a study to evaluate the effect of some classic agronomic determinants (season, tapping system) has to be performed in order to more precisely assess and control the production potential of FuFA-F2 from a plantation. Finally, a "greener" and/or a more efficient extraction technique will be developed to continue optimizing the yield of FuFA-F2 throughout the production chain.