



EXTRACTION AND STUDY OF THE CHEMICAL REACTIVITY OF MESQUITOL FROM *PROSOPIS JULIFLORA* IN VIEW OF POTENTIAL VALORIZATIONS

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Prosopis juliflora was formerly introduced to various dryland areas in Kenya to stabilize soil and fight against desertification, but now it has become a highly invasive shrub as it has displaced many native plants, and it is impacting both livelihoods and biodiversity. This explains why there has been a lot of interest on this plant to find a way of making good use of its excess wood. The phytochemical composition of *Prosopis juliflora* plants show that flavonoids are present that have various observed biological effects such as antifungal activities and antioxidant activities. From literature, a large amount of flavonoid called mesquitol has been extracted, isolated and characterized from the heartwood part of the plant. Therefore, considering the literature reports, *Prosopis juliflora* plants have positive effect on the human diet as well as general health of human beings.

Research on *Prosopis juliflora* is not new in LERMAB. A first PhD research program carried out on wood properties by Peter Sirmah highlighted the high amounts of mesquitol in heartwood of this species^{1,2}. A second research program carried out by Sarah Chepkwony on the intraspecific variability of extractives content and composition demonstrated that *P. juliflora* is rich in different flavonoids among which mesquitol represented the main compounds independently of the age of wood and of the counties, where the trees were harvested³. Compared to classical flavan-3-ols, secondary metabolites known to provide antioxidant roles in plants, it is believed that mesquitol could act as stronger antioxidant agent due to its two catechol moieties acting as radical scavenging agents but also as metal chelators limiting further oxidation reaction. The high quantities of mesquitol present in heartwood as main chemical constituted an opportunity to envisage modified mesquitol derivatives with improved properties, which could be used for different applications. Lipophilic or amphiphilic molecules with antioxidant, antibacterial or antifungal properties can therefore be envisaged for applications as surfactants or gelling agents in cosmetics, pharmaceuticals or wood protection.

References:

¹ Sirmah, P., Dumarçay, S., Masson, E., & Gérardin, P. (2009). Unusual amount of (–)-mesquitol from the heartwood of *Prosopis juliflora*. *Natural product research*, 23(2), 183-189.

² Sirmah, P., Mburu, F., Iyach, K., Dumarçay, S., & Gérardin, P. (2011). Potential antioxidant compounds from different parts of *Prosopis juliflora*. *Journal of tropical forest science*, 187-195.

³ Chepkwony, S. C., Dumarçay, S., Chapuis, H., Kiprop, A., Gérardin, P., & Gérardin-Charbonnier, C. (2020). Geographic and intraspecific variability of mesquitol amounts in *Prosopis juliflora* trees from Kenya. *European Journal of Wood and Wood Products*, 78, 801-809.