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APPROACH ON THE USE OF NIRS TO DISCRIMINATE BOTANICAL MEMBERSHIPS ON GUM ARABIC OF INDUSTRIAL INTEREST

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In the dry zones of Africa, the tree vegetation is an important component of the agro sylvo pastoral systems on which local populations rely. Along the many interesting traits, numerous local trees species have the capacity to exudate important amounts of gum. Gums are hydro colloidal substances of high molecular weight, solved or hydrolysed it produces gels, suspensions or high viscosity solutions with technological properties differing according species that find application in agro-industry and pharmacology. Among others, Acacia genus is the most important gum tree of commercial interest. A. senegal produces "hard" gums for agro-industrial purpose, while A. seyal, produces "crumbly" gums for pharmacological use. More than 40 000 tons of gums are traded each year in the world and it constitute an important source of additional revenue for the local poor populations. Roughly sorted gums are bought on local markets, mixing or falsification with other gums are however quite common practices.

In the qualification of gums classical measurement are the Nitrogen and ash content along with physico-chemical measurement of viscosity and rotating power parameters. Among other factors, these parameters vary mainly according to species. Classical techniques require time and are poorly adapted to market rapid decision, an important stake would be to develop methodologies adapted to pre-qualify the raw marketable product mainly in terms of botanical origin purity.

To test the NIRs applicability for such a purpose, 48 samples of milled powder of raw gums originating from Chad, were scanned twice on a FOSS NIRsystem 6500. Samples were sorted in three groups according to their botanical origin A. senegal (9 samples), A. seyal (16 samples) and a group of 9 other genus/species (23 samples).

Multifactorial discriminant techniques were then applied to the spectral databases. PLS2 and FDA lead to a same result, affecting 96 % of the samples to the right group. As far as NIRS spectral discrimination could appear as a useful tool for rapid discrimination, the approach limited here to a restricted sample set should be forwarded on extended databases.

***Keywords**: Acacia sp, gum Arabic, NIRS, discriminant analysis*

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