

DEVELOPMENT OF A METODOLOGY BY NMR AND CHEMOMETRIC ANALYSIS FOR SOYBEAN QUALITY CONTROL

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International foodcrops commodities, mainly European Community, are more and more interested in keep the quality of the foodcrops. Moreover, consumers are showing an increasing interest to know the origin of the products that they buy, this information is regarded as warranty of quality. This is responsible for the development of new analytical methodologies to verify foodcrops origin as well as its varieties. Brazil is the biggest soybean exporting, so it is so important the use of these methodologies for quality control according to international exigency. In this context, Nuclear Magnetic Resonance (NMR) together with Chemometric Analysis became a very attractive tool. NMR is a powerful task that permits to obtain all information in a single spectra and HR-MAS technique provide the possibility of acquiring a fast NMR spectra directly on solid materials, like vegetal samples, without any sample pre-treatment. On the other hand, Chemometric Analysis, provide a way to observe differences in the spectra of very similar samples irrespective of the large number of information in the spectra. NMR and Chemometric Analysis has been successful used to determine the origin of olive oil, wines and wheat, used to make flour, only by taking NMR spectra acquired directly on wheat flour. In this work we show a soybean discrimination by its cultivar as well as the recognition of genetically modified specimen by ¹H HR-MAS NMR spectra acquired directly on the soybean and by applying the Chemometric Analysis. For this purpose, traditional and their respectively GM soybean samples of three cultivar, with same environmental conditions, were analysed. A powder was prepared and then the NMR spectra were recorded on a Bruker spectrometer operating at 400.13 MHz for hydrogen frequency, equipped with a HR-MAS probe head. Chemometric Analysis of the spectra allowed to distinguish samples according to their cultivar as well as GM or traditional. This methodology may help Brazil to certificate its agricultural products, not only soybean, once a single HR-MAS NMR spectra is necessary.