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## GC/MS application in the determination of lipids in archaeological artifacts samples

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The connection of chemistry as a science with conservation-restoration and historical research of cultural property is of great importance, because these materials (artifacts, buildings, etc.) are able to store chemicals that allow information both cultural aspects (actions anthropic) as non-cultural (vegetation, and others). The necessity of methods to extract, identify and quantify chemical compounds stored in archaeologies samples such as ceramics, accurately and precisely, makes the gas chromatography coupled to mass spectrometry (GC/MS) to appear as an important analytical tool. This work aims at the optimization methodologies by GC/MS for characterizing lipids found in archaeological artifacts (ceramic fragments) obtained in Cerritos located in the Pampa biome, in the southern portion of the Patos's lagoon, southern Rio Grande do Sul-Brazil. The methodology is based in a solvent extraction of lipids under ultrasound, clean up by micro silica column and derivatization with MSTFA (N-methyl-N-trimethylsilyltri fluoroacetamide) and analysis by GC/MS. A better characterization, with clarification of several isomeric structures, was obtained in 4.0 g of sample and 30.0 mL eluent (CHCl<sub>3</sub>:CH<sub>3</sub>OH 2:1 v/v) during the passage in the micro-column with silica. The study allowed us to optimize the methodology for extraction, clean up, pre concentration, identification and quantification of lipid compounds (fatty alcohols, fatty acids, triglycerides) in samples of ceramic artifacts, and identify contamination in the samples in the stages of collection and storage. The results obtained from this method will enable a more accurate and precise correlation between chemical data and the behavior of indigenous pre colonization cultures.

### Biography

Pedro José Sanches Filho completed his Graduation in Chemistry and in Pharmacy (1988); Master's degree in Chemistry at Federal University of Rio Grande do Sul (1997) and PhD in Chemistry at Federal University of Rio Grande do Sul (2002) and Post-doctorate at Nova University of Lisbon (2007). He is currently a Professor and Researcher at Federal Institute of Education, Science and Tecnologia Sul-rio-grandense, Leader of the research group on environmental contaminants.

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