



Palynology at School

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Palynology derives from the Greek word palunein = sprinkle, dust, also recognized in Latin Word polle = flour (Jasonius & McGregor, 2002). Palynology is the study of palynomorphs (microfossils with an organic membrane, resistant to acid attack). Palynomorphs could be pollens, spores, dinoflagellate, cysts of algae and fungus. Palynology has been developed during the twentieth century, and its studies have contributed to various scientific fields such as taxonomy, genetics, melissopalynology, forensic science, the study of allergies, historical studies of vegetation, climate change, stratigraphy etc. (Kapp's 2000).

The extraction of palynomorphs from sediments is usually made using strong acids (HF and HCl acids). This technique needs specific laboratory conditions, becoming impossible to implement at secondary schools. The use of sodium hexametaphosphate (Calgon[®]) is an alternative extraction technique of palynomorphs to the acids technique. The aim of this work was the extracting of palynomorphs from mudrock samples of Cretaceous age and gypsum from a Upper Triassic age diapir that outcrop in a beach near our school, using the sodium hexametaphosphate technique.

The students collect the samples at the Arrifes beach (mudrocks) and Ponta da Baleeira (gypsum). In the laboratory the samples started to be diluted in hot water with dish detergent in order to obtain a homogeneous mixture. In the following days, several decantations were made, always adding a dose of Calgon[®] in order to reduce the amount of clays in suspension. After this procedure the samples were washed with a sieve of 15 μm in order to remove the finer sediment, leaving only the organic residue together with some resistant minerals. Heavy liquid (ZnCl_2 , $d = 2$) were used to separate the resistant minerals from the organic residue. The residues were mounted in slides and afterwards study using and transmitted light microscope.

With the analyses of the samples they were able to identify the presence of spores, pollen and dinoflagellates. It was found that one of the Cretaceous samples had a great diversity and abundance in palynomorphs. The sample collected from the gypsum diapir revealed poor in organic matter, the absence of palynomorphs may be due to the presence of fungi that may have decomposed the other palynomorphs. The low abundance of dinoflagellates and the dominance pollens and spores in the Cretaceous samples, suggests a marginal marine sedimentary environment with a greater continental contribution. The results show that the technique can be used to analyze the palynological component of the samples without using the strong acids.

Implementing this technique with a larger number of samples and further palynological studies can allow some conclusions about paleoenvironments of the stratigraphic sections.