

CHARACTERISATION OF ACTIVE PRINCIPLES DERIVED FROM NATURAL CLINOPTILOLITE MODIFIED WITH SODIUM CARBONATE

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Introduction

It is well established that natural clinoptilolite from Tasajeras deposit (Cuba) does not produce biological damage to humans. This, plus the higher stability of natural clinoptilolite in acid environments as compared with its synthetic analogues (Pond, 1995), led to its application as gastric antacid (Llanio *et al.*, 1993). The antacid properties can be further enhanced through hydrothermal transformations (HT) involving sodium carbonate, as it has been proved by *in vitro* tests (Rivera *et al.*, 1996). Since the detailed physical and chemical characterisation of natural zeolites is very important to perform *in vivo* tests, we are presenting in this paper a physical-chemical study of the above mentioned Na₂CO₃-clinoptilolite. A similar study focused on its combination with aspirin is currently in progress.

Experimental

The zeolitic raw material was the purified natural zeolite, NZ, from Tasajeras deposit (Cuba), which is a mixture of about 70% clinoptilolite-heulandite, 5% mordenite, 15% anorthite, and 10% quartz. The particle size was in the interval 37-90 μm. The quality of NZ meets the requirements for the pharmaceutical industry use (NRIB 1152, 1992). NZ was submitted to different hydrothermal transformations (HT) using Na₂CO₃ solutions in order to study the influence of some parameters on the neutralizing capacity. The chosen HT resulted in a zeolitic material called NZC. This product was washed several times with distilled water in order to control the amount of Na₂CO₃. The resulting zeolitic materials with one and eight 15-minutes washing processes will be called NZ* and NZU, respectively (Rivera *et al.*, 1996).

A Philips PW 1218 diffractometer was used for the powder X ray diffraction (XRD) analysis, with CoK_α radiation. Transmission infrared (IR) spectra were collected using a Fourier transform Ati-Mattson Genesis Series spectrometer, while the diffuse reflectance IR spectra were obtained through a Fourier transform Brücker IFS66 spectrometer. In both cases, KBr was used for sample preparation. The surface area