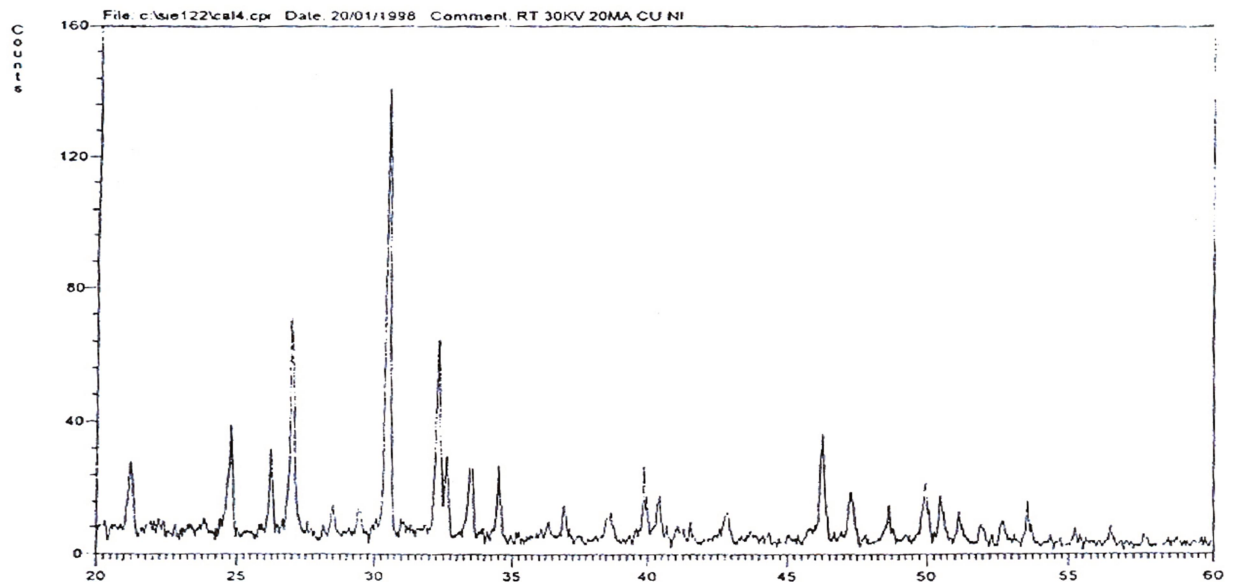


Studies on the mechanism of solubilization of Indian Rock Phosphate by *Aspergillus niger* AB100

^aRuna Ghosh, ^bSubhadeep Ganguly* and ^bAjit Kumar Banik^a

- Department of Chemical Engineering, Biochemical Engineering Division, Biotechnology Laboratory, University of Calcutta, 92, A.P.C Road, Kolkata-700009
- Department of Physiology, Vidyasagar College, Kolkata-700006

*Address for correspondence: res_biol@rediffmail.com



Abstract

A study on the mechanism of solubilization revealed that phosphorus solubilization was attributable both release of organic acids in the broth medium and partially due to enzymatic decomposition of the rock by *Aspergillus niger* AB100. Glutamic acid was the major acid responsible and this was produced by the fungus on utilization of glucose. Other acids produced were citric acid though it was produced in very small amount. Another mechanism responsible for release of phosphorus was the enzyme acid phosphatase which was produced both extracellularly and intracellularly and caused hydrolytic cleavage of the rock. Scanning electron micrographs, petrographic studies and X-ray diffraction studies proved that phosphate is removed from the ore to a considerable extent by *Aspergillus niger* AB100. From the above mentioned mechanism, it was found that about 72.25% of phosphorus solubilized from rock phosphate which was estimated titrimetrically.

Key words: Solubilization, organic acids, *Aspergillus niger* AB100, phosphatase