Microbiological and geochemical studies for treatment of phosphoric acid produced from phosphate deposits at sebaiya area,egypt

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In this study microorganisms isolated from natural sources used in production of phosphoric acid that produced from rock phosphate. This study includes that:1-Geochemical study about some Types of phosphate ores deposits at Sebaiya area – Egypt.2- 6 types of microorganisms (A niger& A.terreus &A.fumigatus & A.flavus & Penicillium Spp and E.coli) isolated from different natural Sources (Soil of wheat plant – Effluent and sewage water of Manshaat Ell Keram village in Kalubia governorate – rice straw).3- Selection to each isolate solely on solubilization phosphate ore [27 P2O5%].These isolates when present in different conditions from [Temperature - pH- incubation periods – different carbon sources - different Nitrogen Sources and different concentration of phosphate weight].The optimum conditions for phosphoric Acid production are:A-Temperature35o C.B -pH 7 or neutral approximately.D- 1% from concentration of phosphate weight.E-14 days from incubation periods.F- Liberated P2O5 increased with using NaNo3 as nitrogen source and glucose as carbon source. A. niger is the best isolate for producing 40.74% form P2O5 about other isolates (A.terreus & A.fumigatus & A.flavus & Penicillium Sp and E.coli).On other hand When use mixing microorganisms of natural sources (wheat soil- effluent water- sewage water and rice straw) directly and study effect of these microorganisms on phosphate solubilization and phosphoric acid production. When put these Mixing microorganisms in different conditions (Temperature - incubation period - pH - and concentration of phosphate weight). Rice straw isolates are the most organisms in phosphate solubilization and phosphoric acid production about other mixing microorganisms (wheat soil - effluent water and sewage water).The optimum conditions applicated on the batch culture as following:1- Concentration of rock phosphate is1%.2- Hydrogen ion concentration (pH) is neutral (7) approximately.3- Temperature of the bioreactor must be 35o C.4- Time of mixing the contents 10 hrs approximately.5- Speed of mixing the contents is 240rpm approximately.6- Particle size of rock phosphate is 90%.This batch culture organized in laboratory of Abu Zaabal for Fertilizers and Chemicals Company (AZFC) for H3PO4 production under optimum conditions. Through the application process of this study using different types of phosphates in P2O5% (24%, 27 %, 30%) with different particle sizes (60%, 80% and 90%) pass through 100 mesh. Application of this work organized on the small bioreactor for each type of phosphate with different sieves (60%, 80 %, and 90 %) pass through

-100 mesh. Phosphoric acid analysed and measured its contents from: (Solid content P2O5%content – heavy elements).Phosphoric acid produced biologically by (A. niger and rice straw) contain small percentage from heavy elements (Fe, Zn, Mn, Cu, Pb, Cd and Co) about phosphoric acid produced chemically. These elements are harmful in industry and affect on the quality of phosphoric acid, which used through several industrie