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BIO-MECHANICAL LEACHING OF URANIUM FROM LOW GRADE BLACK SHALE

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Abstract

The present study was designed to determine the sound effects of ultrasonic treatment and the biologically mediated extraction of uranium from low grade black shale. Low grade uranium was subjected to fungal treatments assisted by sonication by conventional methods. *In situ* fungal leaching of black shale with different fungal strains in the presence of molasses as growth substrate resulted in highest leaching yield of uranium by *Phoma tropica* (57.73%) compared to *Penicillium chrysogenum* (32.30%), *Penicillium citrinum* (25.59%) and *Aspergillus niger* (24.23%). Ultrasonication treatment to the growth medium for the fungus improved the leaching yield of uranium with *A. niger* having more pronounced effects of ultrasonic waves (159%) as compared to other fungi. *Phoma tropica* resulted in reasonably high concentration of 62.59% in shaking mode using orange pulp as substrate and exceeded to 73.47 % by ultrasound treatment. Maximum effect of ultrasonic waves (52.68%) was found in *A. niger*, whereas *Aspergillus flavus* was least effected by ultrasonic waves.

Key words: bioleaching, fungus, organic acids, uranium, ultrasonic waves

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