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The role of cellulose degrading microorganism in organic waste degradation used singly and in consortium

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Abstract : *Cellulose is world's most abundant organic substance and comprises of a major storage form of glucose. Microbial cellulose utilization is responsible for one of the largest material flow in the biosphere, therefore, the aim of the study was to isolate cellulose degrading microbes from fruit and vegetable wastes and to identify cellulose degrading microorganisms mainly bacteria and fungi. Out of the twenty one isolates from different fruits and vegetable wastes isolated during present study, seven isolates were screened for cellulase production using carboxy methyl cellulose (CMC) medium. Of which three isolates were bacterial and four isolates were fungal. Clear zone around the colony was the indication of the cellulose degradation activity of the microorganism. These isolates were screened for quantitative test by 3,5-Dinitrosalicylic (DNS) acid method (Miller, 1959) for estimation of the cellulase enzyme activity. The maximum reduction observed was in the plate inoculated with consortia of microorganisms in comparison to singly inoculated plates with the pre-isolated efficient cellulose degraders. The degradation of organic wastes by the fungal consortia was highly significant. It reduces the time span of degradation and produces no foul odour. Pre-treatment of the organic wastes can be further used as bio manure which is a novel approach.*

Key words*: Cellulose degrading bacteria, optimization, DNS method, Consortia.*

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Introduction:

Cellulose is a linear polysaccharide of glucose residues with -1, 4-glycosidic linkages. Abundant availability of cellulose makes it an attractive raw material for producing many industrially important commodity products. The common practice is that much of the cellulosic waste is often disposed of by biomass burning, which is not restricted to developing countries alone, but is considered a global phenomenon.