



## Extraction of tomato carotenoids, mediated by crude bacterial cellulase

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**Abstract :** Cellulose is the most abundant polymers on earth. It is degraded by the enzyme cellulase. This enzyme is produced by the several microorganisms. Carotenoids are the most widespread naturally occurring yellow to orange pigment which is used as a colouring agent. The synthetic colouring agent expose immense health hazards. Thus, the main aim of the study was to isolate efficient cellulase producing bacterial strains from soil. And use to these bacterial strains to produce maximum crude cellulase by optimizing various parameters. Further the crude enzymes were used for the extraction of carotenoids from tomato. It was seen by thin layer chromatography that extraction mediated by cellulase enhanced the process.

**Keywords:** Crude enzymes, Tomato homogenate, cellulase, cellulose.

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### Introduction :

Cellulose is a linear polysaccharide of glucose residues with  $\beta$ -1, 4-glycosidic linkages. Abundant availability of cellulose makes it an attractive raw material for producing many industrially important commodity products which are of great value in day to day life. It is commonly degraded by an enzyme called cellulase. Cellulase enzyme system comprises three classes of soluble extracellular enzymes: 1,4- $\beta$ -endoglucanase, 1,4- $\beta$ -exoglucanase, and  $\beta$ -glucosidase or cellobiase. Endoglucanase is responsible for the random cleavage of the glycosidic bonds along a cellulose chain. Exoglucanase is necessary for the cleavage of the non-reducing end of a cellulose chain and splitting of the elementary fibrils from the crystalline cellulose. Only the synergy of the three enzymes makes the complete cellulose hydrolysis. Extensive basic and applied research on cellulases revealed the commercial significance and industrial applicability of this enzyme (Bajpai, 1999).

Carotenoids are the most widespread naturally occurring yellow, orange and red pigments used as food colourant. Carotenoids also play a significant role in human health as precursors of vitamin A, scavengers of active oxygen, enhancers of in vitro antibody production, anticancer agents and so on.