

Isolation and Identification of *Saccharomyces cerevisiae* from Caterpillar Frass and their Probiotic Characterization

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Probiotics are live microorganisms which upon ingestion confer health benefits to the host and are widely applied for human and animal welfare. The present study reports the isolation of yeast cells from caterpillar frasses and its probiotic characterization. Out of four yeast cultures isolated, all found to be non-hemolytic and cultures designated as CV-I, CV-II, CV-III and CV-IV showed good bile tolerance at 1.2%. These cultures possessed the ability to grow pH range of 1.5 – 10, exhibited auto-aggregation and co-aggregation capabilities, which are essential for growth in alimentary canal and reduction of pathogen adherence on the intestinal epithelial cells. All cultures exhibited good tolerance to temperature up to 42°C. Isolate CV-I showed wide range of antimicrobial activities against pathogenic bacteria and fungi. This study is the first report of isolation and characterization of probiotic yeast from caterpillar frass. The isolate CV-I has been identified as *Saccharomyces cerevisiae* by molecular methods. This culture is an ideal candidate for further probiotic exploration.

Keywords: *Azadirachta indica*, caterpillar frass, *Saccharomyces cerevisiae*, probiotic yeast.

According to FAO/WHO 2001 reports, probiotics are stated as live micro-organisms which when administered in adequate amounts, confer a health benefit on host, such as production of antimicrobial compounds, modulation of immune response, confer resistance to food antigens, assimilate cholesterol, prevent autoimmunity etc¹. They also possess the ability to enhance digestion and utilization of nutrients², along with production of precursors of aroma compounds such as free amino acids, free fatty acids etc³. Considering these benefits, probiotics are increasingly used in commercial animal production, thereby improving animal health and productivity. According to ICMR-DBT, WHO and world gastroenterology

organization reports a probiotic strains should not be toxic, it should tolerate wide range of pH and temperature and should be able to tolerate the gastric and intestinal environment. Although many yeasts and bacteria are characterized as a probiotic organism, still there is scope for exploring different sources for probiotic microorganisms. Gut microflora is very critical for the health and survival for any organism. It helps the organism to digest the food, detoxify the alkaloids and improve the immunity⁴. Hence, it is likely to isolate a beneficial microorganism from the gut of a healthy organism. This study reports for the first time the isolation of probiotic yeast from the frass of caterpillar of *Indarbela quardinotata* collected from bark of

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