Phytase production by enterobacter cloacae

Suliasih, author

Abstrak

This study aims to isolate the phytase producing bacteria (PPB), a plant growth promoting rhizobacteria (PGPR), from 1Cigna sinensis rhizosphere and to optimize its physicochemical conditioning. Phytase is an enzyme that can hydrolyze the phosphoester bond in organic phosphorus (phytic acid) to form ester phosphate and inorganic phosphate, the available forms of phosphorus. To test its ability to hydrolyze organic phosphates (calcium phytate), the phytase was screened in solid and liquid phytase screening medium (PSM). After isolation, a total of 13 bacteria were positive for this enzymeâ€™s production as indicated by the clear zones of hydrolysis observed around the colony. Enterobacter cloacae strain B1 had the largest hydrolysis efficient (3.43) on solid medium. The phytase-production of the Enterobacter cloacae strain grown in liquid PSM, showed 0.92 U/mL after 48 hours of incubation. This strain produced optimum levels of phytase in the presence of lactose and monoammonium phosphate (NH4H2PO4), as carbon and nitrogen sources, respectively, at 30 Â°C and pH 5.0. The PPB obtained in this study are recommended for further research as to their use as plant biological fertilizers.