

Efficacy of Liquid Protein Hydrolysate from Chicken Feather by *Proteus* sp. on Chili Plant (*Capsicum annum*)[†]

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Abstract: Huge amounts of feathers are discarded as wastage, and it has always been environmentally concerned as they are difficult to destroy. Feather establishes over 90% protein, which gives it a rigid structure. Biotechnological techniques can help to degrade the feathers and use as biofertilizer. The best strategy is by utilizing keratinase producing keratinolytic microorganisms from the poultry waste to deteriorate the feathers. The poultry sample was collected at the local poultry farm. Using skimmed milk agar, enriched proteolytic bacteria were isolated, and the colony morphology assessed. The isolated bacteria were assessed for keratinolytic ability by using carbon and nitrogen sources. Liquid protein hydrolysate (LPH) was prepared and added as fertilizer to determine the growth effect on *Capsicum annum*. The antibacterial and antioxidant activity was assessed. The isolated *Proteus* sp. from the poultry waste has the ability to disintegrate the feathers completely on the 10th day. The enzymatic activity from *Proteus* sp. was observed increased with the presence of fructose (1.435 U/mL) and yeast extract (2.045 U/mL). The optimum temperature was at 40 °C (0.664 U/mL), pH value 7 (0.871 U/mL), and feather concentration at 1.5% (1.2 U/mL). LPH promoted the growth of *Capsicum annum* and increased total chlorophyll content (5.7341 mg/g) in test plants. The antimicrobial activity displayed that *Escherichia coli* is susceptible to LPH, and also increased antioxidant activity was demonstrated in the test plants. Thus, the addition of liquid protein hydrolysate exhibited that it has the capability to aid plant development.

Keywords: Feather; *Proteus* sp.; *Capsicum annum*; *Escherichia coli*.

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Conflicts of Interest

The authors declare no conflict of interest.