

ABSTRACT

The work describes the isolation of protease producing bacterial strains, optimization of enzyme production and its application in the preparation of leather. Thirty five strains of bacterial were isolated from different soil and water sample and were tested for proteolytic activities. Two strains designated as IIB-18 and IIB-27 were found to exhibit consistently highest proteolytic activities of 29.1 and 28.7 U/ml, respectively. The isolated strain IIB-18 was finally selected, as it showed the efficient rate of dehairing of goat skin. The selected strain was found to be Gram -ve, motile, rod, Catalase +ve, starch hydrolysis +ve, casein hydrolysis +ve, aerobic and not grown in acidic medium, suggesting that it belong to *Pseudomonas* sp. Physical and nutritional requirements for optimize protease production by this strain were investigated, such as fermentation period, initial pH, incubation temperature, carbon source and size and age of inoculum. Maximum protease production (32.1U/ml) was obtained after 48 h of incubation at 40° C in growth medium of pH 8. The best carbon and nitrogen source for bacterium were 1 % glucose and 0.5% peptone, respectively. The optimum inoculum size and age were determined as 3% v/v and 24 h, respectively. Use of the crude protease as a dehairing and bating agent for producing high quality leather indicated the satisfactory results. Physical testing of the leather of both experimental and control groups indicated that the enzymatically dehairing skin has better strength properties as well as area increased when compared to the control.