ABSTRACT

which permits unrestricted use, distribution, and reproduction in any medium, provided you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. Abstract This study investigated the ability to degrade chicken feathers by bacteria isolated from flamingo feathers in Lake Nakuru which can be applied in the degradation of poultry and abattoir wastes for the production of protein supplement for animal feed formulations. Proteolytic activity of the isolates was screened on casein agar and their efficiency ranged from 3 to 27 mm. Two bacteria isolates; LNC06 later identified as Bacillus agaradhaerens by 16S rDNA sequencing and LNN03 which were found to have high potential in feather degradation. They were grown on chicken feather substrate and growth of bacteria was evidenced by increase in turbidity which was measured using optical density (DO) method and by reduction in dry weight and ash free dry weight. Their degradation performance in relation to temperature and pH was also measured using DO and the optimum growth in feather hydrolysis was achieved at a temperature of 35 ºC and pH of 10. Reduction in feather dry weight and ash free dry weights were both showing significant correlations ($p < 0.05$) for the test bacteria. Results showed that both bacteria were good feather degraders but Bacillus agaradhaerens exhibited remarkably higher abilities than LNN03. Evidence from this study indicated that Bacillus agaradhaerens has high potential for application in feather degradation but further studies should be carried out to optimize the production and investigate the products for suitability as animal feeds protein supplements to improve the health of farm animals.