

**PENGARUH PERBEDAAN SUHU INKUBASI ENZIM ALKALIN
PROTEASE *Pseudomonas* sp. PK4 PADA PROSES BUANG
RAMBUT KULIT DOMBA**

**Dwi Setyani
15/378398/PT/06889**

INTISARI

Penelitian ini bertujuan untuk mengetahui pengaruh perbedaan suhu inkubasi enzim alkalin protease *Pseudomonas* sp. PK4 pada proses buang rambut kulit domba. Materi yang digunakan yaitu 12 lembar kulit domba. Pengaruh perbedaan suhu inkubasi di analisis pada 3 variasi suhu yaitu 28°C, 35°C, dan 42°C. Sampel kontrol adalah kulit dengan proses buang rambut secara konvensional menggunakan bahan kimia Na₂S dan Ca(OH)₂. Uji histologi dilakukan dengan menggunakan kulit setelah proses buang rambut dengan ukuran 1x1 cm. Kulit kemudian diproses lebih lanjut menjadi kulit samak krom. Tahap selanjutnya dilakukan uji kualitas kulit samak. Data yang diperoleh berupa histologi kulit yang dianalisis secara deskriptif dan kualitas kulit samak yang berupa kekuatan tarik, kemuluran, dan suhu kerut dianalisis statistik RAL pola searah dengan 3 ulangan yang dilanjutkan dengan uji *Tukey*. Hasil penelitian menunjukkan bahwa enzim yang dihasilkan isolat PK4 menunjukkan aktivitas protease melalui pengujian zona bening. Aktivitas enzim protease tertinggi pada suhu inkubasi perlakuan 42°C ($P < 0,05$) sebesar 75,78 µg/ml/menit. Penggunaan protease PK4 dengan suhu inkubasi yang berbeda pada proses buang rambut dapat memberikan efek positif terhadap histologi kulit. Suhu inkubasi 42°C dapat menghasilkan kulit yang bersih tanpa adanya rambut baik secara fisik maupun histologi. Suhu inkubasi berpengaruh nyata terhadap kekuatan tarik dan kemuluran ($P < 0,05$) yaitu tertinggi pada suhu 28°C dengan nilai kekuatan tarik sebesar 26,42 N/cm² dan kemuluran sebesar 31,29%, namun tidak berpengaruh pada suhu kerut kulit samak. Kesimpulan penelitian ini adalah peningkatan suhu inkubasi enzim PK4 hingga 42°C dapat mempermudah proses buang rambut kulit domba.

Kata kunci: *enzim protease*, penyamakan, suhu inkubasi.

EFFECT OF DIFFERENT INCUBATION TEMPERATURE OF ALKALINE PROTEASE ENZYME *Pseudomonas* sp. PK4 IN THE DEHAIRING PROCESS OF SHEEP SKIN

Dwi Setyani
15/378398/PT/06889

ABSTRACT

This research aims to determine the effect of different incubation temperature of alkaline protease enzyme *Pseudomonas* sp. PK4 in the dehairing process of sheep skin. Materials used in this experiment were 12 pieces of sheepskin. Meanwhile, the effect of incubation temperature was analyzed using 3 different incubation temperature, i.e. 28 °C, 35 °C, 42 °C. Control sample was also prepared by conventional hair removal process using Na₂S and Ca(OH)₂. Histological tests of the skin were performed on the hair removed sheep skin with the size of 1x1 cm. The skin was then further processed to obtain chrome tanned leather and tested to see the quality of the leather. Obtained data from skin histology were analyzed descriptively and the quality of the leather i.e. tensile strength, elongation, and wrinkles temperature was analyzed using one way statistical analysis of RAL in triplicates. Significant different of the data was continued to be analyzed using Tukey test. The results showed that the produced enzyme had protease activity in the presence of a clear zone. The highest protease enzyme activity which occurred at incubation temperature of 42 °C ($P < 0.05$) was 75.78 µg/ml/min. The use of PK4 protease with different temperatures had a positive effect on skin histology. Incubation temperature of 42 °C produced clean skin without any hair either physically or histologically. Incubation temperature also significantly affected the tensile strength and elongation ($P < 0.05$) of the leather and the highest result was obtained using 28°C incubation temperature. Tensile strength and elongation of that samples was 26.42 N/cm² and 31.29%, respectively. Meanwhile, the incubation temperature has no effect on the wrinkles temperature of the leather. It was concluded that the increasing of protease enzyme incubation temperature until 42°C can facilitate dehairing processon sheep skin.

Keywords: protease enzyme, tanning, incubation temperature