BLEACHING OF POSSUM FUR

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ABSTRACT

The goal of this project was to develop a process for the industrial scale bleaching of possum fur.

Research was undertaken into the bleaching of possum with regard to whiteness of final fur, damage occurring to fur and prevention of matting to fur.

A process was supplied consisting of kill, mordant, oxidative bleach, strip and reductive bleach steps. This process produced fur with a loss of around 9.5% and alkali solubility of around 70%. Improvements made to this process gave a loss of around 5% and alkali solubility of around 50%.

The main alterations made to the process were

(i) Changing the reducing agent and pH of the mordant and lengthening this stage.

(ii) Altering the temperature, time and pH of the oxidative bleach.

(iii) Shortening the strip stage

(iv) Altering the reagent system of the reductive bleach

The displacement bleaching system used was found to be successful in preventing matting of the fibre provided care is taken in transferring the wet fur for drying.

The main difficulty encountered in scaling up the laboratory process was a compression of the fur during oxidative bleaching resulting in a build up of pressure and flow problems through the fur. This is due in part to the hollow nature of possum fibre which gives it a large degree of buoyancy and the swelling of the fibres during oxidative bleaching. Changes in the surface chemistry of the fibres occurring during oxidative bleaching are also thought to play some part since these problems are not encountered with fibre which has undergone a successful oxidative bleach.

These problems were countered by using a shallower bed of fur for bleaching, reducing the flowrate through the fur and reducing the temperature of the oxidative bleach to give a more gradual bleach.

These modifications allowed the successful bleaching of a 3.5 kg batch of fur.

A larger scale pilot plant for the bleaching of 15 kg batches was constructed. An attempted run on this plant using the conditions developed in the smaller plant was unsuccessful. It was specified that the lid on the top of the plant be clamped in place however this was not undertaken as a cost and time saving measure. This then came unstuck during bleaching leading to the overflow of the vessel.

Further work is required to optimise the lower temperature oxidative bleach. With this undertaken it is recommended that the lid be clamped into place on the larger plant and the design parameters determined on the smaller plant verified before further scale-up is attempted.

A full scale plant could not be constructed within the time frame of the project.

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