Preservation of Black-dyed Maori Weaving

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Maori traditionally wove garments from the fibres and leaves of *Phormium tenax* (harakeke, New Zealand Flax). One of the dyes used to decorate these garments was a black iron-tannate complex which degrades the harakeke fibres. As a result, various elements of the dyed garments loose mechanical integrity and fracture. The treatment of a traditional Maori garment using a novel consolidant, zinc alginate, on degraded fibres is presented. A "once only" approach is taken with limited handling, support, consolidation and attachment of broken waist garment lengths.

Introduction

- Harakeke fibres are used for making traditional Maori garments. Elements of these garments are frequently dyed black using an iron-tannate dye. These black-dyed fibres fade and loose their mechanical integrity and therefore require consolidation.
- Several consolidants have been used previously but these consolidants do not prevent fading of the black dye.
- We have found that zinc alginate acts as an effective consolidant and slows the fading of the dye.

Construction of a Piupiu.

- The piupiu is constructed by stripping sections of the outer layer of the harakeke leaf.
- These fibrous sections are then dyed by first treating with a tannin extract from hinau, *Elaeocarpus dentatus* bark and then rubbing in an iron containing mud (paru). The dyed fibrous sections collectively make up the characteristic pattern of the piupiu.

Conserving a Piupiu by Consolidation

- The black dye degrades the harakeke fibres.
- As these fibres age they produce acid which catalyses further degradation.
- This degradation fades and embrittles the fibres, resulting in breakage and loss of elements from the piupiu. In this state the piupiu cannot be handled without further breakage.
- The only approach to conserve fibres in this condition, is to consolidate (glue the fibres together).
- The consolidant (glue) chosen was zinc alginate which neutralizes the acid produced by the ageing fibres and thereby retards the fading of the black dye.

Evaluation

- Tests on artificially aged black dyed fibres, showed no change of colour after accelerated ageing of one month in air at 80% R.H., and 80 °C. In contrast, black dyed fibres consolidated with other agents showed substantial fading under these conditions.
- The fragile and brittle fibres readily absorbed the alginate consolidant solution.
- After drying of the consolidant, no difference in colour could be observed between the consolidated and untreated fibres.

Conclusions

- The consolidation treatment with zinc alginate permitted handling of the piupiu and retention of its artistic and cultural value.