

Identification of Retting Enhancing Microbial Strains in Coconut Fibre Extraction

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Coir fibre is extracted from coconut (*Cocos nucifera* L.) husk. Natural retting process needs at least 3 months period for obtaining good quality bristle fibre. This study was carried out to reduce the retting time by introducing previously identified pectin and cellulose degrading microbial strains from bio chemical tests. For this experiment, coconut variety of CRIC60 from Bandirippuwa estate in Lunuwila was used. Retting experiments were carried out using five different combinations of microbes namely, *Serratia rubidea*, *Bacillus safensis*, *Bacillus thuringiensis* and *Staphylococcus sciuri*. The control was water. The experiment was carried out for two months. The coconut husk samples were collected by two week intervals and Ceylon drum machine was used for the fibre extraction. The percentages of bristle fibre and its qualities were analyzed. The ret liquor samples were also analyzed for pH and Electrical Conductivity. Tensile strength ($118.39 \pm 1.9 \text{ N mm}^{-2}$), breaking load ($3.27 \pm 0.36 \text{ N}$), average length ($127.11 \pm 2.39 \text{ mm}$) and fineness ($27.26 \pm 3.33 \text{ g km}^{-1}$) of initial sample were found to be increased to $145.48 \pm 3.97 \text{ N mm}^{-2}$, $4.35 \pm 0.28 \text{ N}$, $152.01 \pm 2.52 \text{ mm}$ and $57.29 \pm 1.31 \text{ g km}^{-1}$, respectively with the treatment of coconut husks with *Staphylococcus sciuri*, *Serratia rubidea*, *Bacillus safensis*, *Bacillus thuringiensis* mixture for 4 to 8 weeks. Further, impurities (%) was reduced from 3.07 ± 0.25 to 1.06 ± 0.20 with this treatment. These values were satisfied with SLS Standards. Fibre percentage and the quality of ret liquor indicated by pH and Electrical Conductivity were also increased. Good quality bristle fibre can be obtained from coconut husks by treating with *Staphylococcus sciuri*, *Serratia rubidea*, *Bacillus safensis*, *Bacillus thuringiensis* consortium for 4-8 weeks.

Keywords: Coconut fibre, Retting, *Staphylococcus sciuri*, *Serratia rubidea*, *Bacillus spp.*