

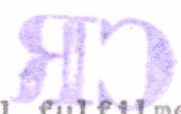
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TERMINALIA CHEBULA TANNINS:  
SOME APPLIED CHEMICAL STUDIES DIRECTED  
TOWARDS THEIR USE IN THE LEATHER INDUSTRY

BY

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ABSTRACT

Studies showed that the tannin content of deseeded Sri Lankan myrobalan nuts was relatively high (45-55%). Estimation of extractable tannin (by the hide-powder method) showed that when particle size was less than 1 mm, these tannins could be extracted efficiently using the mild conditions of 20 min. extraction time and 70-80°C extraction temperature. Of these temperatures, 80°C resulted in the highest tannin extracted. Studies also showed that if the tannins are exposed to longer periods of extraction time at these temperatures, then the quantity of tannin extracted declines.

Investigations confirmed that *Terminalia chebula* tannins were easily extractable and maximum extraction resulted from the use of a volume of water equal to 4 times the weight of seed. One extraction removed more than 80% of the available tannins. It was considered that these results could form the basis of a modified extraction process which is both less time and less energy consuming than processes now in operation.

step was to study the uptake of tannins by hide. Of the pure components, chebulagic acid and chebulinic acid showed the highest rate of uptake. Decomposition products of the latter exhibited lower rates of uptake. In ~~complex~~ solutions the most effective tanning agent was chebulinic acid; the compound was taken up by hide at a much faster rate than its degradation products. Therefore, it appears that the lowering of tannin content (observed by the hide powder method) is at least partly due to the decomposition of chebulinic acid resulting in a lower 'effective tannin' content.

The effect of pH on chebulinic acid uptake by hide and myrobalan tannin uptake by hide was also studied. There was little correlation between these two; this observation is difficult to explain. However, it appeared that pH adjustment was important for myrobalan tanning.

Using these findings (conditions of extraction of tannins and pH adjustment of tannin extracts) commercial scale trials were carried out. These resulted in the production of satisfactory quality leather (as judged by chemical tests and after evaluation by professionals). The relatively high tannin absorption on hide appears to be a salient property of these tannin extracts.



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