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Rayon Grade Pulp From *Melia Azedarach* Linn. (Persian Lilas)

Introduction

Melia azedarach is a fast growing deciduous tree with sapwood yellowish white and heartwood red. It is commonly cultivated all over India. The bark is bitter and is used as anthelmintic. The fruit gives an oil. The leaves and fruits are used in medicine¹. At the request of the Silviculturist, U. P. an investigation was carried out on the suitability of this wood for the production of rayon grade pulp. In earlier work, the results of the proximate chemical analysis, fibre dimensions and the results of pulping for the manufacture of writing and printing paper from this wood are described². In another publication³ results of groundwood pulping from the wood are described.

Raw material

For this investigation 50 billets of *Melia azedarach* about 105 cm. long and 80 Cm. girth were obtained from Silviculturist, U.P., Nainital. The colour of the wood was yellowish white.

Four billets were chipped and screened. The screened chips were

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Melia azedarach a fast growing deciduous tree can yield pulp of requisite chemical purity and brightness for rayon manufacture by water prehydrolysis sulphate process. The bleached yield is 32.3 percent.

used for pulping experiments for the production of rayon grade pulps.

Production of Rayon Grade Pulps
The screened chips were procured by the water prehydrolysis sulphate process followed by multi-stage bleaching process. The optimum conditions of pulping and bleaching are given below :

Water Prehydrolysis

Material : liquor	1 : 5
Cooking temperature	153°C
Cooking time	2 hrs. (including 1½ hrs to maximum temperature.)
pH of the spent liquor	3.8

Sulphate Digestion (NaOH : Na₂S : 3 : 1)

Total chemicals as Na ₂ O	14.5%
Bath ratio	1 : 4
Temperature	153°C
Time	4 hrs. (including 1½ hrs. to maximum temperature.)

Unbleached Yield 37.8%

Permanganate Number 9.3

Bleaching of the pulp

The water prehydrolyzed sulphate pulp was bleached in four stages as given below with intermediate water wash:—

1st Stage Chlorination)

Available chlorine on o.d. pulp	2%
Consistency	3%
Temperature	22°C
Time	½ hour

2nd Stage (Caustic Extraction).

Caustic soda	2%
Consistency	5%
Temperature	60°C
Time	1 hour

3rd Stage (Sodium Hypochlorite)

Available chlorine on o.d. pulp	1%
Consistency	5%
Temperature	22°C
Time	2½ hours.

4th Stage (Chlorine Dioxide)

Available chlorine on o.d. pulp	1%
Consistency	8%
Temperature	80°C
Time	2 hours

The bleached yield of the pulp was 32.3% and it had a brightness of 89 (Mgo=100). The chemical analysis of the pulp was carried out which is given below.

Chemical Analysis of the pulp

Cellulose *✓* 94.0%

Cellulose <i>✓</i>	5.3%
Cellulose <i>✓</i>	1.1%
Pentosans	2.25
Ash	0.08%

It is seen that pulp of requisite chemical purity and brightness for rayon manufacture can be prepared from *Bakain Melia*

azedarach in a yield of 32.3 percent by water prehydrolysis sulphate process. If the viscose prepared from the pulpa passes the filterability test, it can be tried for viscose manufacture.

References

1. Gamble J. S.—A manual of Indian Timbers (Sampam Lon Marteoand Co. London 1922.)
2. Guha, S. R. D., and Negi J. S. Indian Forester 91 No. 12, 867, (December 1965).
3. Guha, S. R. D., Man Mohan Singh and Krishnan Kumar. Indian Forester 92, No. 6, 357 (June 1966).