

Quality of Ethephon Induced Gum From *Acacia Senegal*

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In view of commercial importance of gum arabic, ethephon induced gum samples collected in December 1991 from *A. senegal* trees grown at CAZRI Research Farm, Jodhpur have been analysed to find out quality of the gum and the results are reported here.

Holes were made in the main trunk of the trees at about 1.25 m above the ground level and ethephon solution was introduced into the holes. The holes were slanting downwards reaching the sapwood. Gum exudation from ethephon treated *A. senegal* trees started after 10 to 15 days. To determine loss on drying, the gum samples were dried to constant weight at 105°C. For water insoluble matter determination, 5 g powdered gum was dissolved in about 100 mL of water in a 250 mL Erlenmeyer flask. Dilute hydrochloric acid (10mL) was then added and the solution boiled gently for 15 minutes. It was then filtered hot through previously heated, cooled and weighed filtering crucible. The residue was washed thoroughly with hot water, dried at 105°C and weighed. Ash was determined by taking accurately weighed powdered gum in a previously ignited, cooled and weighed silica dish. It was then heated, gradually increasing the heat not exceeding dull red heat until free from carbon, cooled and weighed. A 10% (w/v) fibre free solution in a 20 cm long tube was used to determine optical rotation.

The samples of ethephon induced gum from *A. senegal* trees growing at CAZRI Research Farm, Jodhpur, were procured in December 1991. The gum samples were in the form of irregular, broken tears of varying size, cream brown in colour, having brittle fractured surface. The samples were odorless and tasted bland and mucilaginous. Their powder was brown or light-straw colour. The gum samples, practically insoluble in alcohol, were almost entirely soluble in twice their respective weights of water yielding a highly viscous slightly acidic solutions. When diluted with more water and

allowed to stand, the samples yielded very small amounts of gummy residue. The gum samples also conformed to tests given in Table 1. Other physico-chemical characteristics of the gum samples are given in Table 2.

The ethephon induced gum samples have, thus, been found to conform to the Pharmacopoeia of India specifications for Indian gum (Anonymous 1970). Ethephon induced *A. senegal* gum collected in 1986 from Beriganga, Jodhpur, also conformed to these specifications (Khan & Harsh 1992). Tapping of ethephon induced gum, therefore, appears to have great potential in view of encouraging results about its quality from different locations.

Table 1 Tests performed on ethephon induced gum samples

Tests	Results
Addition of solution of lead subacetate to aqueous solution	solution was gelatinised
Microscopic examination of the powder with solution of ruthenium red.	Powder did not acquire pink colour.
Treatment of a solution of 0.25 g of sample in 5 mL of water with 0.5 mL of solution of hydrogen peroxide and 0.5 mL of 1% w/v solution of benzidine in alcohol (90%)	Solution produced blue colour.
Addition of 0.2 mL solution of lead acetate to a 10 mL solution (10% w/v) of sample	No precipitate
Addition of 0.1 mL of 0.1 N iodine to a 10 mL solution (10% w/v) of sample	No blue or brown colour
Addition of 0.1 mL solution of ferric chloride to a 10 mL solution (10% w/v) of sample	No bluish black colour

Table 2 Physico-chemical characteristics of ethephon induced gum samples from *A. senegal*

Characteristics	Pharmacopoeia of India specification for Indian gum	Ethephon induced <i>A. senegal</i> gum samples collected in Decmeber, 1991		
		1	2	3
Optical rotation	Slightly dextrorotatory or slightly laevorotatory	Slightly laevorotatory ($\alpha, -1.95^\circ$)	Slightly laevorotatory ($\alpha, -3.9^\circ$)	Slightly laevorotatory ($\alpha, -3.4^\circ$)
Water insoluble matter	Not to exceed 50 mg	37 mg	12.4 mg	18.8 mg
Loss on drying	15%	10.5%	9.73%	10.3%
Ash	Not more than 5%	3.92%	3.84%	3.62%
Acid insoluble ash	Not more than 1%	0.47%	0.44%	0.26%

References

Anonymous 1970 *The Pharmacopoeia of India*, Second Edition, Published by the Manager of Publications, Delhi, P. 347.

Khan HA & Harsh LN 1992 Physico-Chemical characteristics of ethephon induced gum from *Acacia senegal*. *Indian Drugs* 29(11) 507

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