VEGETABLE TALLOW AND STILLINGIA OIL FROM THE FRUITS OF SAPIUM SEBIFERUM ROXB.

by

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Summary. *Tallow and stillingia oil were extracted from the fruits of* **Sapium sebiferum** *Roxb and various physico-chemical constants of these fractions determined. The separation of tallow appears feasible since it does not involve any cumbersome steps in processing.*

Sapium sebiferum. Roxb is an exotic tree of Chinese origin, and it has acclimatised in the North Western regions of West Pakistan (11,14). It is a medium size glaborous deciduous tree. It was originally introduced as an ornamental tree but later habitated and thrived in moist places along the banks of canals. The leaves, resembling somewhat leaflets of *D. sissoo*, are conspicuous orange to bright red during autumn before leaf-fall(2).

The fruits are source of tallow. The tallow is contained in the capsule, coating the seeds. It is, thus, classed as a seed-coat fat. The average yield of fruit of 4-5 year old tree has been recorded as 17 to 25 lbs., whereas of mature trees it may be as high as 75 lbs. (6). The tallow extracted from the fruits is hard and white, and is commercially employed in several forms, such as in candle-making to give a clear inodorous flame without smoke, and in paints and varnish industry. The data reported herein bringforth various physico-chemical constants and salient fatty acid composition of tallow and oil.

Material and Methods. Ripe fruits were collected from trees along the banks of canals in Charsadda. The seeds were separated and the tallow, covering the seeds, was softened and removed. Similarly, oil from seeds, i. e. stillingia oil, was extracted with organic solvents, petroleum ether and hexane.

Various physico-chemical constants of tallow and stillingia oil and also the composition of fatty acids were made following the methods outlined in A.O.A.C. (1) and given by Snell and Biffin (13).

Results and Discussion. The yield of tallow and stillingia oil is 18.2% (whole fruit basis) and 11.5%, respectively. The fruits yield fair quantity of tallow. The yield is quite high and the tallow could easily be removed after softening the tallow-covering by boiling fruits in water and tearing the softened tallow apart from the seeds.

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Various physico-chemical constants and the composition of fatty acids of tallow are presented in Table 1. Some pertinent values, as were reported by other workers, are also being given in order to show some comparison. It, overall, appears that the composition of tallow and the constants compare favourably with the data given by other workers. Since tallow can be used for edible purpose (a century old accepted use in China), as well as for stiffening softer edible fats, it offers though a minor source of utilising the otherwise waste-going fruits of this tree species. It is also used as a high class burning and lighting oil, as well as a substitute of tung oil in China (12). This tree species has adapted favourably well. Some commercial interest to utilise the fruits can help in popularising it amongst the farming community.

Kernal Oil. The kernal oil of this species is usually popularly named as stillingia oil. It is not desired in admixture with tallow because it is poisonous and renders tallow unfit for edible purposes. The oil yield is fairly high and can economically be extracted when the fruits are to be processed for screening tallow. The oil thus extracted was evaluated and the various constants and the composition of it are given in Table 2. As was given for tallow, comparable values, reported by other workers, are also given. The oil appears to have marked drying power.

Conclusion. The recovery of tallow and also of kernal oil (stillingia oil), and the specification of relevant physico-chemical constants bring out certain features of interest for possible utilization of fruits of this tree species.

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