E2-18: Evidence for the presence of an invertase in the flowers of *Woodfordia fruticosa* (Malita), a fermentation catalyst used in the manufacture of Ayurvedic drugs

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Fermented ayurvedic drugs known as "arishta" are of widespread usage. These are produced by fermenting a sucrose solution containing plant extracts. The fermentation is set off by the addition of *Woodfordia fruticosa* flowers. Earlier it was shown that *W.fruticosa* flowers caused an increase in the rate of inversion of sucrose by an enzymic process. The present study was conducted to determine whether the invertase activity was endogenous or caused by the microorganisms in the flowers.

The microorganisms in the flowers were killed by gamma irradiation. The radiation sensitivity of the microorganisms was determined by subjecting samples of the flowers to increasing doses of radiation (40 krad to 967 krad). The irradiated samples were cultured in Yeast Malt extract medium and Nutrient Agar medium, at 30°C for 48 h and examined for fungal and bacterial colonies.

Rates of inversion by radiation sterilized and non irradiated flowers were measured. Flowers (3.1g) were incubated at room temperature with 50 ml of a sucrose solution (52% w/v) that had been sterilized by autoclaving at 121°C for 5 min.

The sucrose concentration in the solution was measured by HPLC on Hypersil APS column (3x100mm) using a RI detector and acetonitrile-water (80:20) as the mobile phase.

Microbial colonies were not observed when the radiation dose was above 100 krad. Flowers subjected to 242 krad were used in the inversion studies. The average inversion rates caused by sterilized and non irradiated flowers are given in the table.

time (d)	*rate of inversion radiation sterilized*	*(g/d) non irradiated*
1	8.09	9.29
3	7.43	9.08
5	7.68	8.35
7	6.08	7.50
10	5.18	5.29

The results show that radiation sterilized *W.fruticosa* flowers are capable of inverting sucrose at > 80% of the rate of inversion by non irradiated flowers. This is in contrast to our previously published results, where we showed that heat sterilized flowers were unable to invert sucrose. This result, together with our observation (unpublished) that microorganisms isolated from the flowers of *Woodfordia fruticosa* are unable to invert sucrose, establishes that the source of invertase in *W.fruticosa* is endogenous.