

## Effect of pretreatments on extending the shelf life of minimally processed rhizomes of *Lasia spinosa*

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The rhizomes of *Lasia spinosa* (Sinh. Kohila) is a vegetable of medicinal value consumed by Sri Lankans. It also has a high fibre content. Due to a busy life style, most of the present day Sri Lankan house wives are reluctant to cook *L. spinosa* as cleaning prior to cooking is difficult and it cannot be cleaned and kept for a long time without undergoing browning. If minimally processed *L. spinosa* is available in a 'ready to cook' form it will be a good marketable product and will become a popular vegetable among the urban population. The present study was undertaken to deduce the optimal conditions required to produce minimally processed *L. spinosa* using the minimum amount of synthetic chemicals and to deduce the nutrient value of the product. Studies were carried out with two varieties of *L. spinosa* that are found in markets of Sri Lanka and are referred to as *L. spinosa* ver.1 ('big kohila') and *L. spinosa* ver.2 ('finger kohila').

Preliminary studies were carried out to deduce the best conditions for minimal processing of *L. spinosa* by packing pre-treated, cleaned cut chips of *L. spinosa* in low density polyethylene (150 gauge) pouches (6 x 6 inches) and storing at room temperature and 4 °C for seven days. *L. spinosa* chips were washed with distilled water and 100 ppm chlorinated water. For pretreatments, dipping in distilled water (T<sub>1</sub>) (control), 2% (w/v) calcium chloride (T<sub>2</sub>), 0.5% (w/v) citric acid (T<sub>3</sub>), 2% (w/v) calcium chloride + 0.5% (w/v) citric acid (T<sub>4</sub>), 0.5% (w/v) ascorbic acid (T<sub>5</sub>), 1% (w/v) lime juice (T<sub>6</sub>), 0.5% (w/v) ascorbic acid + 1% (w/v) lime juice (T<sub>7</sub>), 0.5% (w/v) ascorbic acid+0.5% (w/v) citric acid (T<sub>8</sub>),

0.5% (w/v) sodium metabisulphite (T<sub>9</sub>), 0.1% (w/v) acetic acid (T<sub>10</sub>) and 0.1% (w/v) acetic acid+0.5% (w/v) ascorbic acid (T<sub>11</sub>) were used. Based on the physical appearance, for samples stored at 4 °C for seven days, pretreatments T<sub>1</sub> (control), T<sub>3</sub>, T<sub>4</sub>, T<sub>5</sub> and T<sub>8</sub> were selected for the final experiment. It was observed that the selected pretreatments were better than the commonly used preservative sodium metabisulphite. pH, ascorbic acid content, texture and degree of browning were measured after the first, third, fifth and seventh day of storage while microbiological assays (aerobic plate, coliform, *E. coli* and *Salmonella*) were carried out after the seventh day. Based on the results of the microbiological studies, samples T<sub>1</sub>, T<sub>3</sub> and T<sub>4</sub> were selected for sensory evaluation (colour, odour, texture, taste and overall acceptability) and determination of crude protein and crude fibre.

Microbiological assays and sensory evaluation of the cooked product (taste, texture, odour), consumer acceptability, economical feasibility, and head space analysis indicated that the best condition for minimally processed *L. spinosa* Ver.1 was T<sub>3</sub> although degree of browning, texture and nutrient content (proteins, crude fibre) gave better results with T<sub>4</sub>. For Ver. 2 treating with 0.5% (w/v) citric acid was the best. Storing at room temperature was totally unsuccessful. For both samples T<sub>3</sub> and T<sub>4</sub> there was a decrease in the protein content and increase in fibre.

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