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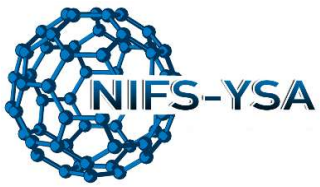

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Evaluation of prebiotic activity and dietary fiber content of raw and processed *Artocarpus nobilis* (Ceylon breadfruit) seeds

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Background: *Artocarpus nobilis* (Ceylon breadfruit) is an underutilized native tree in Sri Lanka. The nutritional and functional properties of the seeds of that tree are yet to be explored. These seeds may contain potential prebiotic compounds, and processing may alter their functionality.

Objectives: To investigate the *in vitro* prebiotic activity and dietary fiber content of raw and processed: roasted, boiled and microwaved *A. nobilis* seeds.

Methods: Dietary fiber content was determined according to the enzymatic gravimetric method specified in AOAC (2012)-991.42, using a dietary fibre assay kit. Seeds were subjected to simulated *in vitro* digestion using synthetic gastrointestinal enzymes and the non-digestible portion was used as the carbon source for probiotic bacteria: *Bifidobacterium animalis* Subsp. *lactis* (BB-12) and *Lacobacillus acidophilus* (LA-5). Prebiotic activity of *Artocarpus nobilis* was determined in comparison with the commercially available prebiotic, inulin, after 24-hour incubation.

Results: The total dietary fiber (TDF) content of *A. nobilis* seed ranged from 27.72- 30.08% in dry matter. Raw seeds had significantly higher ($p < 0.05$) TDF content than the processed samples. Nevertheless, TDF content did not significantly ($p > 0.05$) vary among roasted, boiled and microwaved samples. The insoluble dietary fiber content of the raw and processed samples ranged from 25.23-27.58 % DM, where soluble dietary fiber content accounted for less than 3.2 %. When considering the prebiotic activity, both raw and processed *A. nobilis* seeds showed significantly higher ($p < 0.05$) *Lactobacillus* proliferation ability than the positive control inulin, where boiled seeds showed the highest (2.466 log CFU/ml) activity. When compared to inulin, both raw and processed *Artocarpus* seeds showed significantly lower ($p < 0.05$) *Bifidobacterium* proliferation ability. However, there was no correlation between dietary fiber composition and prebiotic activity of the studied samples.

Conclusion: According to the findings of this study *A. nobilis* seeds could be considered as a good source of dietary fiber with greater prebiotic potential.

Keywords: *Artocarpus nobilis, Bifidobacterium, Dietary fiber, Lactobacillus, Prebiotic activity*