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Quantification of selected prebiotics and prebiotic potential of local yams Gahala (*Colocasia esculenta*), Kiriala (*Xanthosomas agittifolium*), and Innala (*Plectranthus rotundifolius*)

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Locally available yam varieties in Sri Lanka are known to possess considerable dietary fiber, which may have a potential to act as prebiotics. Since some of the locally available yam varieties have been found to have prebiotic potential, the need to evaluate such potential in other local yam varieties has been taken into consideration. In this research, three locally available yams, Gahala (*Colocasia esculenta*), Kiriala (*Xanthosomas agittifolium*), and Innala (*Plectranthus rotundifolius*) were evaluated for their prebiotic potential. It was done by determination of indigestible polysaccharide content, quantification of resistant starch, evaluation of gastric and intestinal digestion followed by *invitro* colonic fermentation, and investigating the effect of selected yams on probiotic growth.

Yams were obtained from local markets in Sri Lanka.Ethanol extraction was performed for fresh ground samples and acidic and enzymatic digestion was conducted using the dried extracts to quantify the indigestible polysaccharide. Resistant starch was determined through the resistant starch assay kit (Megazyme), which uses the AOAC official method 2002.02. Moreover gastric and intestinal digestion with dialysis followed by *in vitro* colonic fermentation was conducted and crude fiber, resistant starch, and total sugar contents were measured before and after the digestion/fermentation, to evaluate the effect of yams on the latter. Finally, the effect on probiotic growth was evaluated by obtaining the colony counts after inoculating *L. acidophilus* (New Zealand Dairies®) culture to de Man Rogosa and Sharp agar containing 3% (w/w) dried yam powder.

The indigestible polysaccharide content, per gram of dry extractm, for Gahala, Kiriala, and Innala, were 623.7 ±8.8 mg, 400.9 ±15.8 mg, and 448.7 ±17.0mg respectively. Resistant starch content was determined as a percentage of total starch content, and the yams contained 65.73±2.67%, 54.49±3.51%, and 37.82±9.14% respectively. The crude fiber content and resistant starch content were relatively similar before and after the gastric and intestinal digestion, proving that they were not digested and moved to colon for the fermentation. After colonic fermentation the total sugar content was reduced, suggesting that some compounds were fermented in colon, which is a main characteristic of a prebiotic. The *L. acidophilus* colonycounts were increased initially and then started to decline after a period of time, confirming that the yams do have a positive effect on probiotic growth.The series of experiments revealed that the local yams Gahala (*Colocasia esculenta*), Kiriala (*Xanthosomas agittifolium*), and Innala (*Plectranthus rotundifolius*) had considerable quantities of prebiotic compounds and have prebiotic potential.

Key words: Gahala, Kiriala, Innala, prebiotic potential.

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