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***In Vitro* Hydrolysis Rates and Physicochemical Properties of Fifteen Different Starch Sources in Sri Lanka**

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Increased prevalence of non-communicable diseases has become a crisis of mankind. Diet is the main governing factor for the high blood glucose level. However starch contributes 40-80% of energy attainment from the human diet which provides a direct source of glucose. Hence, this study was conducted to compare the physicochemical properties of fifteen different starch sources (*Corn, Wheat flour, Atta flour, Palmyrah, Blackgram, Soybean, White basmathi, Red basmathi, White raw rice, Red raw rice, Chickpea, Kurakkan, Oats, Kithul and Olu*) available in Sri Lanka. Amylose content, syneresis percentage and *in vitro* hydrolysis rates of starches were determined using Amylose Amylopectin Assay Kit, Centrifugation-filtration method and GOD method, respectively. The study revealed that there are significant differences ($P < 0.05$) in syneresis percentage, amylose content and *in vitro* hydrolysis rates among starches. The highest ($P < 0.05$) syneresis percentage was found in *Soybean* ($72.26 \pm 2.08\%$) while the lowest syneresis percentage was obtained from *White raw rice* ($11.75 \pm 0.81\%$) but in terms of amylose content *Palmyrah* ($36.12 \pm 0.91\%$) showed the highest ($P < 0.05$) while *Soybean* ($7.22 \pm 0.92\%$) showed the lowest ($P < 0.05$). *Kithul* showed the highest α -amylase enzyme hydrolysis rate ($1596.39 \mu\text{M}$ maltose/minute) while *White basmathi* showed the highest amyloglucosidase enzyme hydrolysis rate ($217.54 \mu\text{M}$ glucose/minute) and in both occasions *Soybean* was the least. Furthermore this study revealed that syneresis percentage is negatively correlated with amylose content ($r = 0.57$, $P < 0.0249$) and also according to the findings of the present study, starches like *Blackgram, Olu, Red Raw Basmathi and Soybean* with lower hydrolysis rates and higher amylose contents are beneficial for the diabetic patients to manage their blood glucose level.

Keywords: Amylose, Amylopectin, Amyloglucosidase, Syneresis

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