

ABSTRACT

With the changing of lifestyles globally, the demand for ready-to-eat (RTE) foods has increased. However, most of these RTE foods have been associated with intermediate (55-70) to high glycaemic index (GI) (>70) linked to high incidences of type 2 diabetes. Nyandarua County in Kenya is a major producer and consumer of potato and has the second highest type 2 diabetes prevalence (10.8%). Therefore, there is need to investigate whether there is a relationship between the potato and potato products consumed and the high type 2 diabetes prevalence. Total phenolic content (TPC), dry matter, and the levels of rapidly digestible starch (RDS), slowly digestible starch (SDS) and resistant starch (RS) may vary depending on potato variety and the form of the product, and may affect the rate and extent of starch digestibility, which affects the GI. This study investigated the effects of variety and processing method (product form) on the levels of TPC, dry matter, RDS, SDS, RS and GI in chips and crisps prepared from 3 potato varieties (*Shangi*, *Dera mwana* and *Dutch Robijn*). Potato variety significantly affected TPC, RDS, SDS and GI but did not significantly affect RS ($p>0.05$). Processing method results in different product forms which significantly affected dry matter content and GI ($p<0.05$). Higher levels of TPC and lower scores of GI were found in chips and crisps prepared from *Dera mwana* variety. Significant positive correlation relationships were observed between GI, and RDS and SDS ($p < 0.05$), and RDS and SDS ($p<0.05$). This study recommends reduced consumption of chips prepared from *Shangi* in favour of *Dera mwana* variety which has better potential for glycemic control.