Peiler available and underutilized in Ghana even though the potential exists. Demand for healthy snack foods is on the rise (Rodríguez-Miranda et al., 2011). Yam especially water yam, baobab and tamarind are incorporated as extrusion technology. Six blends of composite flours with Baobab (B), Tamarind (T) and Yam (Y) proportions of 0:0:100, 0:40:60, 40:0:60, 30:10:60, 10:30:60 and 0:30:70 were formulated and extruded (Table 1).

Table 1: Extrusion Parameters

<table>
<thead>
<tr>
<th>Formulations</th>
<th>Temp (°C)</th>
<th>Screw speed (rpm)</th>
<th>feed rate (g/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1(100Y)</td>
<td>300</td>
<td>300</td>
<td>1200</td>
</tr>
<tr>
<td>F2(40T:60Y)</td>
<td>300</td>
<td>300</td>
<td>1200</td>
</tr>
<tr>
<td>F3(30B:70Y)</td>
<td>300</td>
<td>300</td>
<td>1200</td>
</tr>
<tr>
<td>F4(30B:10T:60Y)</td>
<td>300</td>
<td>300</td>
<td>1000</td>
</tr>
<tr>
<td>F5(10B:90T:60Y)</td>
<td>300</td>
<td>300</td>
<td>1200</td>
</tr>
<tr>
<td>F6(20B:80T:60Y)</td>
<td>300</td>
<td>300</td>
<td>1200</td>
</tr>
</tbody>
</table>

MATERIALS AND METHODS

Table 2: Physicochemical Properties of Extrudates

RESULTS AND DISCUSSION

RESULTS AND DISCUSSION contd.

Table 4.0 Pasting Characteristics of Extrudates

Extrudates | E1(100Y) | E2(40T:60Y) | E3(40B:60Y) | E4(30B:10T:60Y) | E5(10B:90T:60Y) | E6(20B:80T:60Y)
--- | --- | --- | --- | --- | --- | ---
Tpaste (°C) | 50.5±0.78 | 51.25±0.49 | 72.00±1.26 | 50.95±1.06 | 50.30±0.00 |
Ptime (min) | 0.79±0.06 | 1.09±0.16 | 5.48±0.72 | 0.75±0.05 | 0.08±0.01 |
PV (bu) | 1.50±0.17 | 2.00±0.41 | 5.00±0.58 | 2.00±0.01 | 14.67±0.79 |
MV(bu) | 1.00±0.01 | 2.00±0.71 | 1.67±0.58 | 2.00±0.07 | 5.33±0.58 |
Cooling(bu) | 2.50±0.71 | 9.50±0.71 | 4.67±0.58 | 10.00±1.41 | 14.33±2.08 |
FV(bu) | 2.00±0.07 | 9.00±0.14 | 3.67±0.58 | 9.00±1.41 | 14.33±2.08 |
BV(bu) | 0.50±0.00 | 0.00±0.00 | 8.00±1.00 | 0.00±0.00 | 7.67±1.53 |
SBV(bu) | 2.50±0.71 | 6.00±1.41 | 2.67±0.58 | 88.00±1.41 | 8.33±1.15 |

Physicochemical, pasting and sensory properties of the extrudates were assessed. Panellists preferred extrudates with low baobab but high tamarind substitution. Generally E2(40T:60Y) was most preferred. Incorporation of tamarind and baobab seemed to improve the crunchiness of the extrudates as compared to 100% Yam extrudate (100Y).

CONCLUSION

• An acceptable yam-based extruded snack has been produced.
• The potential for scaling up this product for enhanced marketability of water yam and other underutilized crops, baobab and tamarind, is high.
• This may lead to diversified value added products, improved market value of the crops and job creation.

ACKNOWLEDGEMENT

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BACKGROUND

Demand for healthy snack foods is on the rise (Rodríguez-Miranda et al., 2011). Yam especially water yam, baobab and tamarind are available and underutilized in Ghana even though the potential exists for these crops to be used in novel snack products (Azam-Ali and Peiler, 2005; Akissoe et al., 2003) using extrusion technology.

OBJECTIVE

The study assessed the suitability of incorporating baobab pulp powder (B) and tamarind kernel powder (T) into Yam flour (Y) for the development of an extruded snack.

Table 2: Physicochemical Properties of Extrudates

Extrudates | Moisture (%) | WBC (%) | pH | Swelling power |
--- | --- | --- | --- | ---|
E1 (100Y) | 1.64±0.02 | 67.50±3.54 | 5.12±0.03 | 244.57±4.79 |
E2 (40T:60Y) | 2.15±0.04 | 72.50±3.53 | 4.05±0.06 | 286.74±2.96 |
E3 (40B:60Y) | 1.08±0.01 | 135.00±7.00 | 5.32±0.09 | 274.29±0.76 |
E4 (30B:10T:60Y) | 2.26±0.05 | 90.00±7.07 | 4.21±0.15 | 284.62±20.31 |
E5 (10B:90T:60Y) | 1.12±0.03 | 85.00±7.00 | 4.83±0.06 | 359.94±5.17 |
E6 (20B:80T:60Y) | 2.03±0.07 | 62.50±3.54 | 4.91±0.11 | 261.08±1.93 |

Fig 1: pictures of yam, tamarind and baobab

Fig 2: Process flow for extrudates

Physicochemical, pasting and sensory properties of the extrudates were assessed.