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Quantitative analysis of selected fatty acids in sweet potato (*Ipomoea batatas*) tuber flour

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Almost all foods contain different fatty acids, including saturated, mono-unsaturated, poly-unsaturated, and essential fatty acids. The amount of fatty acids varies, making it possible to change the intake of fatty acids by changing foods. Sweet potato (*Ipomoea batatas L.*) root is a tuber crop and a low cost energy source, containing 4-5% of crude fat on dry weight basis. This study reports the percentage of some selected fatty acids of boiled *Ipomoea batatas* and dried flour of sweet potato cultivars consumed by Sri Lankans. The analysis of fatty acids from sweet potato tuber flour was carried out by extracting (n-hexane: isopropanol), hydrolyzing the lipids, methylating the fatty acids, and subjecting them to the Gas Chromatography. Standard fatty acids were used for fatty acid identification. GC column- Rtx-wax & Diode array detector was used for this analysis.

Table 1: Selected fatty acids of sweet potato flour expressed as a % of fat content (W/W).

| Variety (Boiled & dried flour) | Caproic acid (C6:0) | Caprylic acid (C8:0) | Capric acid (C10:0) | Lauric acid (C12:0) | Myristic acid (C14:0) | Palmitic acid (C16:0) | Stearic acid (C18:0) | Oleic acid (C18:1) | Linoleic acid (C18:2) |
|--------------------------------|---------------------|----------------------|---------------------|---------------------|-----------------------|-----------------------|----------------------|--------------------|-----------------------|
| Ama | 4.43 | 0.13 | 3.03 | 8.98 | 0.26 | 25.25 | 7.97 | 41.89 | 7.87 |
| HordiMalee | 0.02 | 0.06 | 1.82 | 9.56 | 0 | 29.28 | 8.99 | 44.23 | 6.03 |
| CARI 9 | 0.02 | 0.17 | 3.74 | 14.42 | 0.47 | 27.20 | 1.43 | 45.7 | 6.87 |
| Dhawala | 0.03 | 0.24 | 2.47 | 13.59 | 0.44 | 25.76 | 10.81 | 38.24 | 8.43 |
| Ranabima | 0.26 | 0.38 | 3.11 | 19.07 | 0.47 | 22.19 | 8.79 | 40.10 | 5.63 |
| CARI426 | 0.03 | 0.02 | 3.39 | 22.75 | 0.41 | 15.94 | 9.66 | 41.72 | 6.07 |
| Gannoruwa White | 0.14 | 0.60 | 2.34 | 22.99 | 3.90 | 26.76 | 10.70 | 26.63 | 5.95 |
| Chithra | 0.23 | 0.51 | 2.51 | 23.17 | 0.05 | 26.49 | 1.91 | 37.64 | 7.49 |
| Wariyapola White | 0.59 | 1.56 | 0.87 | 12.01 | 1.06 | 29.18 | 11.93 | 35.89 | 6.92 |
| Wariyapola Red | 0.63 | 0.11 | 0.80 | 9.48 | 0.37 | 30.76 | 11.03 | 37.82 | 9.01 |
| CARI 273 | 0 | 0.15 | 1.56 | 8.00 | 0.52 | 29.45 | 10.26 | 38.88 | 11.48 |

The most abundant fatty acid found in sweet potato was oleic acid (26-46%), with all varieties except one having more than 35%, indicating that sweet potato flour is a good source of mono-unsaturated fatty acids. Other major fatty acids found in sweet potato were palmitic (15-31%) and lauric (8-23%) acids. Linoleic acid (6-12%), an essential fatty acid (omega-6) was also present in all varieties studied. Sweet potato flour is a good source of saturated fatty acid, oleic acid, and linoleic acid.

Keywords: Sweet potato, Lauric acid, Linoleic acid, Oleic acid, Palmitic acid, Stearic acid.

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