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

G.R.N.N. Waidyarathna,^{1*} S. Ekanayake,¹ and G.A.P. Chandrasekara²

¹ Department of Biochemistry, Faculty of Medical Sciences, University of Sri Jayewardenepura,
 Nugegoda

² Department of Applied Nutrition, Faculty of Livestock Fisheries and Nutrition, Wayamba University
 of Sri Lanka

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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