



Pharmaceutical standardization and physicochemical characterization of traditional ayurvedic mineral drug red ochre roasted in cow's ghee (*Shuddha Gairik*)

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Received 26 November 2019; revised 19 February 2022

Supplementary Material:

Table S1 — Declared nutritional information of cow's ghee (100 g)

Sr. No.	Parameter	Unit	Value
1	Total fat	g	90.5
2	Saturated fat	g	64
3	Monounsaturated fatty acid	g	23.9
4	Polyunsaturated fatty acid	g	2.5
5	Trans fat	g	0
6	Cholesterol	mg	159.8
7	Total carbohydrates	g	0.1
8	Sodium	mg	5.6
9	Dietary fiber	g	< 0.5

Table S2 — Temperature recordings (°C) during roasting of red ochre in cow's ghee

Min	PRO 1	PRO 2	PRO 3
0	113.0	115.6	108.3
10	127.3	129.4	119.3
20	132.7	133.8	125.5
30	140.5	141.8	142.7
40	149.3	147.3	146.1
50	153.1	151.6	152.4
60	158.6	158.9	157.1
70	162.8	162.1	164.5
80	165.5	163.3	168.1

Table S3 — FT-IR analysis showing prominent wave number (cm⁻¹) of CRO and PRO

CRO	PRO 1	PRO 2	PRO 3	Closest wavelength for PRO (n = 3)
3688	3690	3684	3684	3686
3619	3619	3618	3618	3619
-	2919	2920	2921	2920
-	2851	2851	2851	2851
-	1741	1741	1740	1741
-	1467	1465	1465	1465
1114	1114	1114	1114	1114
1024	1023	1024	1025	1024
1003	-	-	-	1003
995	996	999	1000	998
-	935	936	935	935
910	908	908	909	909
796	795	795	795	795
752	750	751	751	751
692	692	692	692	692
643	642	643	641	642
629	629	629	629	629

Wave numbers 692 and 629 cm⁻¹ have not been indicated in Figure 5 since % absorbance are 72.54 and 84.94 in PRO while 81.06 and 97.32 in CRO, respectively.

Table S4 — Inductively Coupled Plasma Optical Emission Spectrophotometry (ICPOES) analysis of crude and processed red ochre for heavy metal content

Sample	Steps	Arsenic (As)		Cadmium (Cd)		Mercury (Hg)		Lead (Pb)	
CRO	Weight (g)	0.102	0.107	0.102	0.107	0.102	0.107	0.102	0.107
	Reading in Conc.	3.69	2.96	18.92	18.27	4.1	3.85	45.5	44.5
	Result	1.82	1.38	9.29	8.53	2.01	1.8	22.33	20.78
	Mean	1.6		8.9		1.9		21.5	
PRO 1	Weight (g)	0.102	0.135	0.102	0.135	0.102	0.135	0.102	0.135
	Reading in Conc.	-0.12	-6.97	15.43	19.76	5.32	10.28	40.65	51.63
	Result	ND	ND	7.64	7.30	2.60	3.8	19.87	19.08
	Mean	ND		7.5		3.2		19.5	
PRO 2	Weight (g)	0.107	0.108	0.107	0.108	0.107	0.108	0.107	0.108
	Reading in Conc.	-3.26	-9.73	16.52	16.86	3.66	6.79	43.62	44.39
	Result	ND	ND	7.8	7.8	1.7	3.2	20.4	20.6
	Mean	ND		7.8		2.4		20.6	
PRO 3	Weight (g)	0.102	0.135	0.102	0.135	0.102	0.135	0.102	0.135
	Reading in Conc.	-4.3	-11.3	16.6	20.9	1.3	1.8	39.3	52.1
	Result	ND	ND	7.76	7.8	0.63	0.68	19.17	19.4
	Mean	ND		7.8		0.7		19.3	

ND- Not Detected

Table S5 — FT-IR analysis showing prominent wavenumber (cm^{-1}) of CRO and PRO compared with the reported cow's ghee, kaolinite and ferric oxide spectra individually

CRO	Closest wavenumber for PRO ($n = 3$)	Cow's ghee ²⁹	Kaolinite ³¹	Ferric oxide ³²
3688	3686	-	3670	-
3619	3619	-	3645	-
-	-	3005	-	-
-	2920	2922	-	-
-	2851	2853	-	-
-	1741	1744	-	-
-	1465	1466	-	-
-	-	1418	-	-
-	-	1377	-	-
-	-	1236	-	-
-	-	1161	-	-
1114	1114	1114	1117	-
-	-	1098	-	-
1024	1024	-	1030	-
1003	1003	-	1005	-
995	998	-	-	-
-	-	966	-	-
-	935	-	-	-
910	909	-	909	-
-	-	870	-	-
796	795	-	-	-
752	751	-	-	-
-	-	721	-	726
692	692	-	-	692
643	642	-	643	-
629	629	-	-	629

CRO- Crude Red Ochre, PRO- Processed Red Ochre

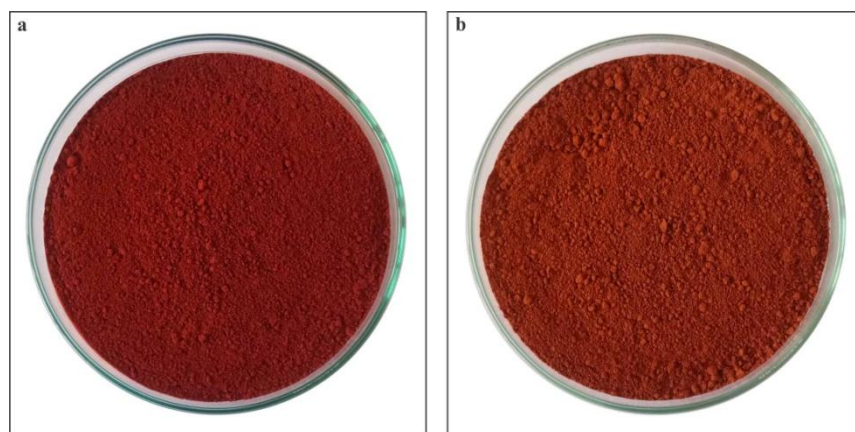


Fig. S1 Comparative appearance of two marketed samples of powdered red ochre: (a) accepted; (b) rejected.