

## Comparative physico-chemical identification of pure and market cow ghee samples

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Adulteration of cow's ghee can easily be identified by standard physico-chemical tests. Samples were coded from S-01 to S-14. A pure cow ghee sample (S-01) was prepared at the laboratory under hygiene conditions. Thirteen market samples (S-02, S-03, S-04, S-05, S-06, S-07, S-08, S-09, S-10, S-11, S-12, S-13 & S-14) were purchased from Northern, Southern, Western and Central provinces of Sri Lanka and analyzed for physico-chemical parameters; moisture and volatile matter contents, relative density, refractive index, acid value, iodine value, saponification value and peroxide value based on SLS 313-3-5:2016; 313-1-2:2009; 313-1-5:2017; 313-2-6:2009; 313-2-2:2019; 313-2-1:2014 and 313-3-7:2017 protocols respectively. The results showed that the moisture and volatile matter of all 14 samples ranged between 0.12 - 1.89, relative density between 0.0690 - 0.0810, refractive index ranged between 1.4551 - 1.4612; acid value ranged between 0.5 - 27.8 mg KOH/g of ghee; iodine value ranged 20.29-35.99% by mass; saponification value ranged 202-245 mg KOH; peroxide value ranged between 3-172 milliequivalents/1000g ghee respectively. The pure cow ghee sample (S-01) showed the value for moisture and volatile matter, 0.21; relative density, 0.073; refractive index, 1.4581 at 28<sup>o</sup>c; acid value, 0.5; iodine value, 35.18(S-01); saponification value, 230; peroxide value, 3. The physicochemical values of the samples S-02 to S-12 were deviating from the values of the pure sample. S-13 and S-14 samples showed values closer to pure samples, indicating that they were genuine cow ghee and the samples (S-02 to S-12) were adulterated with some other oils. This study revealed that adulteration of ghee can be identified cost effectively by employing conventional physico-chemical parameters.

**Keywords:** Adulteration, Cow ghee, Physicochemical, Quality