Assessment of the Deterioration of Beef Tallow used in the Frying of "Tortas Fritas"

Pinchak, Y., Merlinski, N., Grompone, M.A., Laboratorio de Grasas y Aceites, Facultad de Química, Universidad de la República
Montevideo, Uruguay

The purpose of this work was to assess the level of degradation of beef tallow used in street stalls, for the frying of "tortas fritas". The "torta frita" is a typical preparation from the Río de la Plata: a round shaped fried dough (with a hole in the middle) made of flour, salt, water and beef tallow, which is traditionally fried in the latter fatty material. As it is usual in deep frying the frying medium is reused more than once, giving rise to the deterioration compounds formed as a consequence of the hydrolysis, oxidation and thermal degradation of the fatty material. The samples were taken directly from the street stalls or were sent to the laboratory by the "Servicio de Regulación Alimentaria (Intendencia de Montevideo)", the authority in charge of carrying out food control in the city. As a consequence, some of the samples did not correspond to the moment of discard, in which case chances are that a higher alteration of the beef tallow would have been registered. The deterioration level was studied by determining the total polar compound's content (TPC), acid, peroxide and p-anisidine values (AV, PV and PAV respectively). The TPC was under the threshold (25%, value generally established in international regulations) for all the samples. Only 15% of them showed a TPC over 20%, which indicates that they should be near the moment of discard. The secondary oxidative degradation (PAV) was very high, unlike the primary oxidation (PV). This low PV values are in accordance with what was expected, as the fatty material had been exposed to high temperatures and peroxides break down in these conditions. Hydrolytic deterioration in most of the samples was low, ranging from 0.5 to 2.4%. This is usual when dealing with fatty material used in a frying process, this is why it is a barely employed criteria for assessing its degradation. The low level of deterioration could be explained by the highly saturated fatty acid composition of the beef tallow, mainly stearic and palmitic acid (25 - 34 % and 20 - 27 % respectively), and its low content of polyunsaturated fatty acids.