

Abstract

Provenance in Sheep: The Karoo Lamb Story [†]

Louwrens Hoffman ^{1,*} and Sara Erasmus ²

¹ Queensland Alliance for Agriculture and Food Innovation (QAAFI), The University of Queensland, Brisbane, QLD 4069, Australia

² AFSG–Food Quality and Design, Wageningen University & Research, 6700-6709 Wageningen, The Netherlands; sara.erasmus@wur.nl

* Correspondence: louwrens.hoffman@uq.edu.au

[†] Presented at the third International Tropical Agriculture Conference (TROPAG 2019), Brisbane, Australia, 11–13 November 2019.

Published: 8 April 2020

Abstract: Noted for its unique herbaceous flavour which is imbued from a diet of indigenous fragrant plants, Karoo lamb is marketed as one of South Africa’s finest meat products and enjoys Protected Geographical Indication (PGI) status in South Africa and the European Union. Its distinct quality is imparted through natural grazing of the sheep on the Karoo veld that has a significant influence on the sensory and chemical profile of the meat. Descriptive sensory analysis, fatty acid analysis, solid-phase microextraction, isotope ratio mass spectrometry, portable near-infrared reflectance spectroscopy and proton transfer reaction-mass spectrometry proved to be very successful analytical tools for the authentication of regionally unique lamb meat, distinguishing Karoo from Non-Karoo lamb. Characteristic volatiles, specifically terpenes, present in both the Karoo bushes and the Karoo lamb meat and fat were detected. The dominant terpenes were tentatively identified as α -pinene, β -pinene, limonene and trans-caryophyllene, and they were particularly prominent in the fat tissue. Within the Karoo, regional differences were apparent as Hantam Karoo lamb had the highest ratings for herbaceous aroma and flavour and contained the greatest concentration of terpenes. Herbaceous aroma and flavour attributes associated with a diet rich in fragrant Karoo plants were verified with stable isotope ratio analysis. The results confirm that Karoo bushes are responsible for the distinct aroma and flavour of Karoo lamb, thereby providing vital evidence for its certification and to justify the protection of its indicator status.

Keywords: flavour; aroma; volatiles; terpenes