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Review

Alternative feed resources and their effects on the quality of meat and milk from small ruminants☆

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Abstract

The present paper reviews the quality of meat and milk from sheep and goats offered alternative feeds as a replacement for concentrates. Legume seeds and pods, shrubs, local agro-industrial by-products or novel pasture species are cheap and widely available in Mediterranean countries and are suitable for sheep and goat nutrition. Many of these alternative feed resources (AFR) contain secondary compounds, such as tannins. Tannin-containing feeds result in meat of a lighter colour and tend to increase milk yield and protein content, probably because they protect dietary proteins from ruminal degradation. Conjugated linoleic acid (CLA) content in kid meat can be increased by feeding animals chopped cactus cladodes. Grazing saltbush (*Atriplex* spp.) preserves lamb meat colour stability, suggesting that the high level of vitamin E in these shrubs protects myoglobin from oxidation. When olive cake silage is included in lamb or ewe diets, linoleic and oleic acid contents may increase in meat and milk fat, respectively. The appearance of terpenes in sheep and goat milk is

Abbreviations: AFR, alternative feed resources; CLA, conjugated linoleic acid; CT, condensed tannins; FA, fatty acids; MUFA, mono-unsaturated fatty acids; PUFA, poly-unsaturated fatty acids; SFA, saturated fatty acids; AIBP, agro-industrial by-products; ELC, extruded linseed cake

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enhanced by grazing on some novel pasture species, such as *Galium verum*, *Cichorium intybus* and *Chrisantemum coronarium*, which modify milk and cheese sensorial profile, compared to grazing on conventional forages.

Keywords: Feeding resources; Meat quality; Milk quality; Sheep; Goats

Contents

1. Introduction

Some Mediterranean countries are characterized by harsh climate conditions. In these regions, pasture is available only for short periods or is not available at all. Moreover, the use of cereals in animal diets creates a competitive conflict with human nutrition, and the use of soybean is expensive. An interesting challenge for scientists in the field of animal nutrition is the introduction of alternative feedstuffs that could overcome the problems of