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Feeding Value of Under-Utilised Food Byproducts and Forages as Alternatives to Conventional Feeds for Syrian Awassi Sheep

Souheila Abbeddou[4], Safouh Rihawi[1], Monika Zaklouta[2], Andrea Corinna Mayer[2], Hans-Dieter Hess[3], Luis Iñiguez[2], Michael Kreuzer[4]

[1] *International Center for Agricultural Research in the Dry Areas (ICARDA), Diversification & Sustainable Intensification of Production Systems Program, Syria*
[2] *Swiss Federal Institute of Technology (ETH), Institute of Animal Sciences, Switzerland*
[3] *Agroscope Liebefeld-Posieux Research Station (ALP), Switzerland*
[4] *Swiss Federal Institute of Technology (ETH), Agricultural and Food Science, Switzerland*

Abstract

The search for alternative feed resources for livestock not competing with human nutrition is getting increasingly important during the current food crisis. In semi-urban areas of dry regions of the Middle-East, there are quite a number of under-utilised feeds which include both agro-industrial byproducts and forages. However, these alternatives probably differ largely in nutritional value. So far only few studies investigated and compared such under-utilised feeds. Two comparative experiments using 2×5 diets, characterised by one feed each, were conducted in the present study. Per diet, six castrated male Awassi (fat-tailed) sheep weighing on average 41.5±4.3and 39.7±4.7 kg (means±SD; Expt. 1 and 2, respectively) were employed. Diets in Expt. 1 had a barley straw:concentrate ratio of 0.5:0.5 with 2/3 of the concentrates being either barley/wheat bran (control), tomato pulp, olive cake, sugar beet pulp or broken lentils. In Expt. 2, diets with a forage:concentrate ratio of 0.73:0.27 contained either barley straw (control), olive leaves, lentil straw, Atriplex halimus (saltbush) foliage or vetch hay as the only forages. Diets were isonitrogenous and supplemented with a vitaminized mineral-salt mixture. Animals were offered 1.1 kg dry matter/d and had unrestricted access to water. In Expt. 1, palatability of olive cake was low, and comparative calculations from dietary organic matter (OM) digestibility (0.48 of intake) suggest that metabolisable energy is only 1.9 $^{MJ}/_{kg}$ dry matter. Diets based on sugar beet pulp (0.68) and broken lentil (0.69) were similar to control (0.66), while the tomato pulp diet ranged slightly lower in digestibility (0.59). The Atriplex-based diet had a relatively high digestibility of fiber (NDF, 0.58) and OM (0.71), but supply with digestible OM was limited by its high salt content. Additionally, Atriplex leaves at that level were either not completely consumed or caused diarrhea and 2.5-fold water intakes. The other forages were quite similar in digestibility, except the well-digestible vetch hay, and no significant effects on body N-balance were noted. The study showed some promising alternatives to traditional feeds, while others (e.g. olive cake) might be used at low levels only. Atriplex is a special case, where also the extra water expenditure might restrict its use.

Keywords: Atriplex, digestibility, lentil, olive leaves, sheep, sugar beet pulp, tomato pulp, vetch hay

Contact Address: Souheila Abbeddou, Swiss Federal Institute of Technology (ETH), Institute of Animal Sciences, Universitaetsstrasse 2, 8092 Zürich, Switzerland, e-mail: assou262000@yahoo.fr