

Camels Nutrition, addressing the future

Rafat Al Jassim¹ and Jim Hogan²

¹School of Animal Studies, the University of Queensland, Gatton Campus, QLD 4343;

²81 Boscombe Rd., Brookfield, QLD 4069 Australia

*To whom correspondence should be addressed. E-mail: r.aljassim@uq.edu.au

Studies of ruminant nutrition in the past century have largely been made with sheep and cattle. These studies have confirmed information obtained with simple stomached animals that energy is the major nutrient, but the efficiency of its use depends on adequate supplies of amino acids, minerals and vitamins. Quantitative studies of digestion have yielded knowledge of the amounts and types of metabolites that become available to the animal following microbial fermentation in the complex ruminant stomach. These, coupled with the results of balance studies, form the basis of mathematical models predicting the rates of growth and milk production of animals supplied with known amounts of feed of known composition.

By comparison, the knowledge of camel nutrition is inadequate. Areas of ignorance are currently being filled by extrapolation from data obtained with cattle but the validity of such extrapolation has, in general, not been adequately tested. Certainly, well known physiological differences between the two species, in areas such as water metabolism and the functioning of a four- compartment stomach in cattle compared with a three compartment stomach in the camel have been investigated but data on the consequences of these differences to nutrient supply and utilization are lacking. Furthermore, important questions have not been asked. For example, if the passage of digesta past the omasum has an important role in determining feed intake in cattle, how is feed intake regulated in an omasum-less camel? In another direction, the rumen microbial eco-system in cattle has developed around daily feed and water consumption. What is the effect on the corresponding ecosystem in camels of intermittent water intake and what in turn does an altered microbial population have on fermentation of feed, feed intake and nutrient yield?

The camel has adaptive advantages over other ruminant species that make it ideally suited for the production of meat and milk in semi-arid regions. The area of such regions, currently large and increasing in size, is likely to expand further under the influence of global warming. It has been postulated that a time will come when such regions will no longer be suitable for sheep and cattle and their logical replacement would be the camel. There would appear to be a sound case for the urgent expansion of nutritional studies on the camel, so that scientists and producers are prepared when that time arrives.