77. Levels of 25-Hydroxyvitamin D3 in Meat of Moroccan One-Humped Dromedary Camels (*Camelus dromedarius*)

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Introduction

The dromedary camel is a good source of meat especially in areas where the climate adversely affects the performance of other meat animals. In the one-humped camel, lean meat contains about 78% water, 19% protein, 3% fat, and 1.2% ash with a small amount of intramuscular fat, which renders it a healthy food for humans (Kadim *et al*., 2008). In man, diet is an important determinant of plasma 25-OH-D concentrations which is lower in vegetarians than in meat and fish eaters (Crowe *et al*., 2011). However, the information available on nutritional value of camel meat is very limited, and to the best of our knowledge, there is no report evaluating the amount of vitamin D3 amount in the meat of camels. Therefore, this study was undertaken to determine the 25-OH-D3 levels in serum and tissues of camel.

Materials and Methods

Samples of blood, muscle *longissimus thoracis* (between the 10th and the 13th rib of the left side), liver and kidney were collected from ten 4-5 years old male Moroccan dromedary camels *(Camelus dromedarius)* weighing 300–350 kg. The 25-OH-D3 levels were analyzed by radioimmunoassay method in the National Center of Science and Nuclear Technical Energy in Maamoura, Morocco. Validation for 25-OH-D3 assays included limits of detection, and precision in standard curve following sample dilution, inter- and intra-assays. Values were expressed as mean and standard error (SE) and analyzed by the student test for comparison between samples, and $P<0.05$ was seen as statistically significant.

Results and Discussion

Levels of 25-OH-D3 in serum (ng/mL), liver, kidney and muscle (ng/g) in dromedary camels were 390±45; 7.071±1.003; 6.154±1.067 and 4.241±1.045, respectively (Table 1). Levels in liver were significantly higher than those in muscle ($p< 0.05$; Table 1). Despite the circulating levels of 25-OH-D3very higher in camels than those of domestic ruminants, the amounts of 25-OH-D3 in the various tissues of the camel (muscle, liver and kidney) are similar to the amounts reported for this constituent in the corresponding tissues of several domestic ruminants (Table 1).

Table 1. Circulating (ng/mL) and meat levels (ng/g) in camel and bovine species.

Cow	Liver	4.5±2.6	Cho *et al*., 2006
	Kidney	4.2±2.0	
	Muscle	1.83±0.24	
	Serum	88±7.1	
Beef	Liver	2.59±0.73	Foote *et al*., 2004
	Kidney	3.02±1.13	
	Muscle	1.68±0.37	
	Plasma	62.66±16.74	
Camel	Liver	7.071±1.003	Present study
	Kidney	6.154±1.067	
	Muscle	4.241±1.045	
	Serum	390±45	

Only a limited number of foods naturally contain vitamin D such as fish, meat and offal, eggs, milk and dairy products. Dietary vitamin D is absorbed in the small intestine and hydroxylated in the

liver to form 25-OH-D3, the major circulating form of the vitamin, which is further hydroxylated in the kidney to form 1, 25-dihydroxyvitamin D3, the active form of the vitamin (Holick et Chen, 2008). Other factors, such as vitamin D supplementation, degree of skin pigmentation, and amount and intensity of sun exposure have greater influence on circulating 25-OH-D than diet. The low concentrations of serum 25-OH-D are associated with rickets, osteoporosis, heart disease, cancers, diabetes, autoimmune diseases, depression, and chronic pain (Holick and Chen, 2008). Camels are good potential meat producers especially in arid regions where other meat-producing animals do not thrive. Camel meat contains a 25-OH-D3 amounts similar to those of ruminant meats, thus it's acceptable for human consumption and may replace meat from other animals.

References

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