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An experiment was carried out on female dromedaries and Barki ewes to study the effects of drinking saline water (dilute sea water, 13535 ppm) as compared to fresh tap water (283 ppm) on some nutritional and physiological parameters. Minor differences were observed in weight changes, but were generally in favour of the camel. Dry and organic matter digestibilities were comparable in both species, but crude protein digestion was slightly less in camels. Consequently, camels consumed significantly less TDN and DCP than sheep. It appears that drinking the saline water had not appreciably affected the above mentioned attributes. On the other hand, results of nitrogen balance and the retention of digested nitrogen were both in favour of the camel, camels were at or above equilibrium but sheep had a negative balance throughout. Furthermore, water salinity adversely affected nitrogen retention in sheep more than in camels.

Water salinity affected patterns of water intake and excretion in both species, more so in sheep. Urinary water losses were substantial in sheep. Camels had a greater capacity to concentrate urine. Glomerular filtration was less in camel than sheep, and it increased in both species when given the saline water. Urea clearance on the other hand, was initially greater in camels than sheep (31.0 vs. 19.9 ml plasma/hr./kg.$^{0.75}$). When given the saline water, it decreased in camels but increased in sheep (24.9 vs. 40.4 ml. plasma/hr./kg.$^{0.75}$.

The effects of water salinity on kidney function were discussed in relation to nitrogen conservation and sodium and potassium balances.