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These experiments demonstrate that water is reabsorbed from a hypotonic solution through the bladder wall. Dehydration and neurohypophyseal extracts increase the rate of absorption. Increased permeability of the bladder to water, permitting more rapid osmotic penetration, would explain this response. The mechanism so conceived would resemble the change in permeability of frog skin induced by dehydration or neurohypophyseal extracts. Reabsorption of water from dilute bladder urine may be a response of adaptive value to the frog under conditions of dehydration.

Urea Excretion in Toads and Frogs

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Renal tubular secretion of urea has frequently been demonstrated in the frog. Studies of the urea excretion in the toad, *Bufo alvarius* (B. Schmidt-Nielsen and B. Bowers, unpublished) showed that urea does not appear to be secreted in this species, to the contrary filtered urea diffuses back into the blood at a high rate (the U/P ratios for urea rarely exceed 1.2 to 1.5 even at high tubular or bladder reabsorption of water). The present study was undertaken to investigate if: (1) urea in various species of toads is excreted passively or can be actively secreted or reabsorbed and (2) different species of *Rana* all possess the ability to secrete urea by tubular activity.

Results: *Bufo marinus* was found to concentrate urea in the urine to a slightly higher degree than *Bufo alvarius*, urea U/P ratio up to 3.5 were observed. Plasma urea concentration was maintained at a lower level (8-10mM) than in *Bufo alvarius* (20-25mM). The urea clearance was usually lower than the creatinine clearance. Experiments with DNP failed to show conclusively whether or not urea excretion was affected. Urea injection in the dorsal lymph sac resulted under certain circumstances in urea clearance exceeding the creatinine clearance. Urea clearances in *Bufo marinus* exceeding the filtration rate have also been observed by W. Sawyer (personal communication). *Bufo alvarius* did not show tubular secretion of urea under similar circumstances. Later experiments with *Bufo fowleri* (normal plasma urea concentration 5-8mM) indicated some ability to secrete urea. All species of *Rana* studied, *Rana pipiens*, *palustris* and *sylvatica*, secreted urea, (urea clearances 4 to 5 times as high as filtration rate).

Conclusion: There is a considerable difference in the urea excretion in *Rana* and *Bufo* (Order Salienta). While all species of *Rana* investigated secrete urea at a high rate and maintain a low plasma urea concentration (about 1mM), species of *Bufo* maintain higher plasma urea levels and the amount of urea excreted is usually lower than the amount filtered.