

DOI: <http://dx.doi.org/10.5915/22-2-13591>

Fasting in Ramadan, The Antidiuretic Hormone and Memory

Ramadān is the ninth month in the Hijri Calendar. In this Holy (lunar) month, Muslims are expected to fast for an average of 15 hours daily, from sunrise to sunset. Exempt from this duty are sick individuals, women who are menstruating, pregnant, or lactating, and travellers.

Mustafa et al¹ studied the effects of fasting in Ramadān on fluid and electrolyte balance. They found that total fluid intake during the weeks of fasting was lower than prefasting. Also, urine output during the days of fasting was significantly lower, and urine concentration, greater during the day than during the night, increased progressively during fasting. Serum osmolality also increased during the days of fasting; however, the increase did not attain statistical significance.

Given these findings, it is likely that antidiuretic hormone (ADH) secretion increases during Ramadān fasting. Antidiuretic hormone and its analogues are "old" hormones. Arginine-vasopressin is present in all mammals except pigs and their relatives, in which lysine replaces arginine in the eighth position. Verney² first described the osmotic control of arginine-vasopressin. Later a number of factors were found to stimulate its release including hypertonicity, emotions, and pain.

De Wied and Bohus³ presented the first evidence that an extract of the posterior pituitary gland causes longlasting alterations in the central nervous system. Subsequent experiments by De Wied⁴ showed that the active substance of the crude extract having the ability to induce the behavioral effects was vasopressin. The analysis of the behavioral data revealed that vasopressin facilitates memory.

Oliveros et al⁵ treated four patients with amnesia with vasopressin nasal spray. They noticed an improvement in the mood and memory. Legros et al,⁶ in a double blind study of 23 inpatients having minor

pulmonary or gastroenterological disease, showed that daily treatment with vasopressin for three days led to significantly better attention, concentration, motor rapidity, and memory.

I hypothesize that the increased levels of ADH, which are associated with fasting, improve memory among Muslims during Ramadān and could enhance their ability to function during this month. Controlled experiments should be done to test this hypothesis.

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