V. CONCLUSIONS

Summary and Conclusion

Data have been presented to show that the supraoptic neuron (SON) is a specialized synapse and attempts have been made to show the similarities between the SON and the peripheral autonomic ganglia. In order to prove this two independent experimental systems were utilized: an in vivo system, using conscious dogs and an in vitro system utilizing rat isolated supraoptic-neurohypophyseal preparation (SONH). Different well known adrenergic and cholinergic agonists and antagonists were studied to determine whether they directly influenced ADH secretion. A very sensitive and reproducible radioimmunoassay for ADH release was used to monitor the effects of all the agents tested. These studies represent the first comprehensive examination of the control of ADH release where the hormone level was directly determined. First it was demonstrated that Ach, the putative neurotransmitter, is the chemical agent acting at the synapse in the SON and that its action is nicotinic in nature. Secondly, angiotensin (A-II) was also shown to directly stimulate ADH release. Thirdly, ganglion blocking agents were shown to directly inhibit ADH release. Finally, the alpha agonists, NA, directly stimulated ADH release and could be blocked by the alpha antagonist, phentolamine, while beta agonists and antagonists had no effect.

These findings, which are similar in many ways to those made in peripheral autonomic ganglia support the concept that the SON can be classified as a ganglion with special synapses (nicotinic cholinergic and alpha adrenergic) responsible for modulating ADH release.