Intranasal insulin to improve memory function in humans

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BACKGROUND: Compelling evidence indicates that central nervous insulin enhances learning and memory and in particular benefits hippocampus-dependent (i.e., declarative) memory. Intranasal administration of insulin provides an effective way of delivering the compound to the central nervous system, bypassing the blood-brain barrier and avoiding systemic side effects.

METHODS: Here we review a series of recent studies on the effects of intranasally administered insulin on memory functions in humans. In accordance with the beneficial effects of intravenously administered insulin on hippocampus-dependent declarative memory observed in hyperinsuliniemic-euglycemic clamp studies, intranasal insulin administration similarly improves this type of memory, but in the absence of adverse peripheral side effects.

RESULT AND CONCLUSION: Considering that cerebrospinal fluid insulin levels are reduced in patients suffering from Alzheimer's disease, these results may be of considerable relevance for future clinical applications of insulin in the treatment of memory disorders.