The possible involvement of glycogen synthase kinase-3 (GSK-3) in diabetes, cancer and central nervous system diseases.


Source

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Abstract

Glycogen synthase kinase (GSK-3) is a key enzyme in multiple cell processes. Since many pharmacological compounds that have effects on common metabolic pathways may have uses in many different diseases, we review here the possible involvement of glycogen synthase kinase 3 in diabetes, cancer and CNS diseases. Moreover, diabetes has recently been strongly linked to CNS diseases such as schizophrenia and bipolar illness. GSK-3 is both directly and indirectly inhibited by lithium, a key compound for treatment of bipolar disorder. Several antipsychotic drugs also affect the GSK-3 mediated pathways and postmortem study of brain in schizophrenia led to reports of alterations of GSK-3 activity or mRNA message. However, other reports are contradictory. Development of GSK-3 inhibitors for CNS diseases is complicated by the importance of GSK-3 in glucose metabolism and pancreas function and the possible effect of GSK-3 inhibition to be oncogenic. Further development of GSK-3 inhibitors for clinical trials should be approached with caution.

PMID:21736545