الملخص باللغة الانجليزية:

Possible Interaction Between Some Alkali Metals and Sympatholytic Drugs in Male Albino Rats

Summary and conclusion:

Lithium salts have gained wide spread use in treatment of mono and bipolar affective disorders. In normal rats, lithium - induced hyperglycemia and inhibition of insulin secretion were reversibly inhibited by pretreatment of rats with yohimbine; α 2 blocker or a combination of yohimbine and propranolol, a non-selective β antagonist. The goal of the present study is to investigate the possible mechanism of lithium- induced hyperglycemia and serum insulin inhibition. Parallel study with some alkali metal (cesium and rubidium) that share some physicochemical characteristics with lithium and the role of some alpha and beta adrenoreceptors antagonists in modulation these effects will be studied.**Materials and Methods:** The study was conducted using 96 adult male albino rats that randomly classified into main 4 groups as following:1) Control group, saline – treated6 rat 'N=6 rats', 2) alkali metal treated animals that were divided into three subgroups; 6 rats/each, injected intraperitoneally (IP) twice for one day with lithium 4mEq/kg, cesium3mmol/kg and rubidium3mmol/kg, 3) Adrenoceptor antagonists treated rats that were allocated into three subgroups "6rats/each"injected IP once with prazocin; α 1 blocker 2mg/kg, yohimbine1mg/kg and propranolol 5mg/kg groups,) and group 4) drug combination , they were nine subgroups "N= 6rats/each" (Lithium + prazocin, lithium+yohimbine and lithium + propranolol; also groups of cesium and rubidium were combined with the same adrenoceptor antagonists as lithium) the alkali metals were injected IP half an hour after the adrenoceptor antagonists. Thirty minute later, a blood sample taken for measuring serum levels of glucose, immune-reactive insulin (IRI), catecholamines (epinephrine'E', nor- epinephrine'NE' and dopamine 'D") and elctrolytes (potassium and calcium).Then the animals were decapitated to excise the whole brain for determining their content of the above mentioned catecholamines.

Results: The present investigation revealed that all alkali metal and propranolol alone or combined with them significantly elevated the serum glucose, and depleted the serum IRI

levels, while yohimbine treatment either alone or in combination with each alkali metals induced the reverse, with no- significant changes induced by prazocin either alone or in combination. Administration of alkali metals; lithium, cesium and rubidium, obtained non-significant changes in serum and brain catecholamines levels except significant decrease in brain dopamine levels. While propranolol and prazocinadministration significantly decreased serum E and NE and increased D levels. Therefore the three adrenoceptors antagonists increased brain E and NE & decrease D contentssignificantly, either when used alone or in concurrent with each alkali metals. Administration of all drugs either alone or in combination obtained non-significant changes in serum calcium and potassium levels.

Conclusion: The hyperglycemic effect of alkali metals would seem to involve not only circulating catecholamines but also stimulation of the sympathetic innervation of beta islets of pancreas since the inhibition of IRI is markedly reduced by the α2 antagonist, yohimbine. Furthermore, previous study proved that lithium could inhibit the glycolytic oxidation of glucose. However details of underlying mechanism remain obscure and need further investigation