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Alanyl-glutamine is a strong inducer of GLP-1, which could open the door for using it in improving blood sugar levels in adults with type 2 diabetes mellitus

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Glutamine is a conditionally essential amino acid and considered an important metabolic substrate for rapidly replicating cells. A highly soluble and stable glutamine containing dipeptide alanyl-glutamine (AG) is routinely added to total parenteral nutrition bags, to provide glutamine for protein synthesis. According to our published study entitled “Alanyl-glutamine heals indomethacin-induced gastric ulceration in rats via antisecretory and anti-apoptotic mechanisms”, we discovered for the first time the detailed mechanism of action of AG. AG has a pronounced ability to decrease gastric acid secretion and the capability to increase gastric mucosal proliferation. Besides, the dipeptide proved its anti-inflammatory and anti-apoptotic roles. We found out that the anti-ulcerogenic role of AG pops up through the GLP-1/β-catenin/cyclin D1 cue. It has been noted that AG is a strong inducer of GLP-1, when GLP-1 binds to its receptor; it activates an array of kinases, as PI3K/Akt, in the canonical Wnt signaling. Akt is responsible for the phosphorylation/ inactivation of GSK-3β to set β-catenin free to be translocated into the nucleus to stimulate its target genes including cyclin D1. GLP-1 agonists are growing in popularity as they increase insulin secretion, decrease glucagon secretion, slow gastric emptying, improve satiety, and reduce weight; therefore, AG may have a role in improving blood glucose levels due to its ability to increase GLP-1. Supplementary clinical trials are urgently needed to compare AG versus one of the other GLP-1 agonists in their ability to achieve better improvement of blood sugar levels especially in adults with type 2 diabetes mellitus.

Biography

Co-founder of Innovative Drugs administration at Egyptian Drug Authority. Former head of Egyptian pharmacoeconomics unit. Have a potent drug access and drug registration experience and powerful knowledge of Clinical nutrition. Have strong research capabilities with a Master's degree in pharmacology and toxicology from the Faculty of Pharmacy, Cairo University. Scientific reviewer for Journal of Parenteral and enteral nutrition and PLOS One Journal