GLP-1 agonists and ageing

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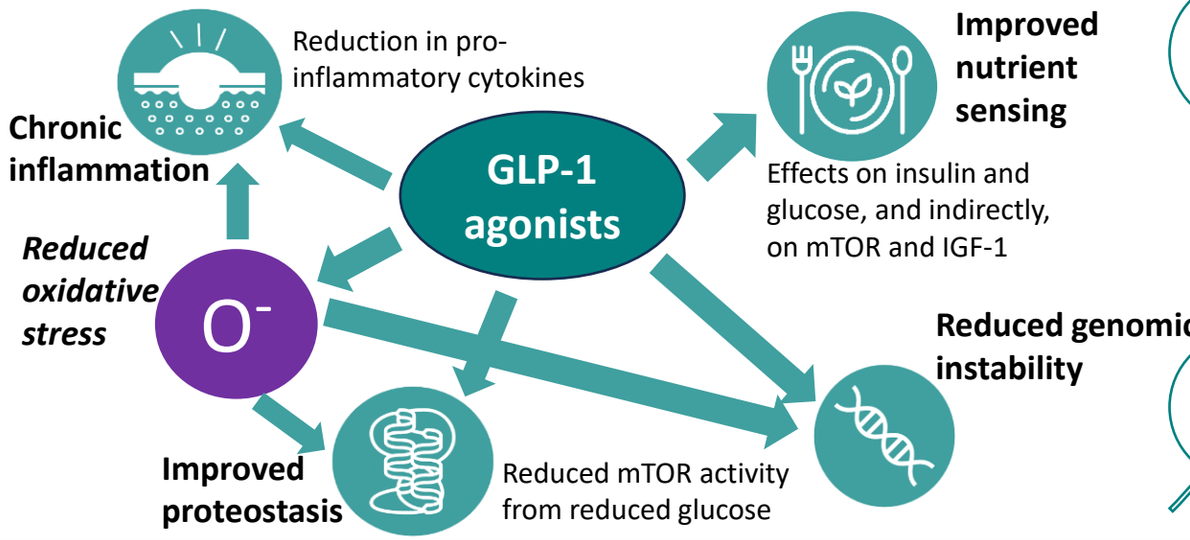
What?

Glucagon-like-peptide-1 receptor agonists (GLP-1 Ras) reduce blood sugar levels and increase gastric emptying.[1] First licensed for use for type 2 diabetes in 2005, to assist weight loss in obesity in 2014. Here we explore another potential indication – treatment of ageing related disease.

Why?

Many chronic illnesses such as ischaemic heart disease, diabetes and dementia are strongly ageing related. Therapeutic options that target the rate of ageing itself as opposed to the diseases that complicate it have the potential to reduce a range of morbidities with increases in healthy lifespan.

GLP-1 agonist potential effects on hallmarks of ageing



Direct effects on insulin and glucose improve nutrient sensing, reduce glucose levels[1] and inhibit mTOR activity.

Proteostasis indirectly enhanced by reduced oxidative stress[1] and reduced mTOR activation arising from reduced glucose.

A reduction in cytokines (inflammatory hormones) and reduced oxidative stress, reduces chronic inflammation[1].

Who?

GLP-1 Ras have emerged as a major therapeutic development affecting diabetes and weight loss management.
Older people might benefit from the effect of GLP-1 Ras on some of the hallmarks of ageing for the prevention or treatment of chronic ageing related diseases.

Author Comments

There is both evidence and theoretical support suggesting that GLP-1 agonists may improve key hallmarks of ageing. However, further research is essential to establish their safety and determine whether they provide a net beneficial effect for individuals without diabetes or obesity but with chronic age-related disease.

References

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2. Shi JX, Huang Q (2018). Glucagonlike peptide1 protects mouse podocytes against high glucose induced apoptosis, and suppresses reactive oxygen species production and proinflammatory cytokine secretion, through sirtuin 1 activation in vitro. Mol Med Rep, 18:1789-1797.