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Punicic acid as a possible supplemental treatment of adolescent type I diabetes

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Background

Type 1 Diabetes
- Diabetes mellitus type 1
- Chronic metabolic disease where the pancreas doesn’t produce insulin
- 5% of the 415 million diagnosed with diabetes have type 1

What causes it?
- Usually follows the body’s autoimmune response
- Genetics
- Viruses
- Environmental factors

Problems with insulin
- Prices have nearly doubled from 2012 to 2016, with this trend continuing
- We need a more affordable, accessible treatment for this disease

Specific Aim

Punicic acid
- Component of pomegranate oil
- There has been success with punicic acid as a treatment for type 2 diabetes in the past
- I propose that we investigate punicic acid’s antidiabetic effects on type 1 diabetes

Research Question

Will a combination of punicic acid and insulin have antidiabetic effects on type 1 diabetes patients?

Hypothesis

Potential Pitfalls

What could go wrong?
- No improvement in:
  - Beta cell function
  - Blood glucose level homeostasis
  - Visceral fat percentage
  OR
  - Subjects being treated with insulin showed improved results over insulin + punicic acid

Potential Conclusions

- Improved PBC functioning, blood glucose homeostasis, and decreased visceral fat percentage
- Better knowledge of type 1 diabetes
- Increase in the manageability of the disease
- Alternative to insulin treatments

Methods

Induce type 1 diabetes in adolescent rats
Allow control group to function normally
Treat group of rats with insulin
Treat group of rats with insulin + punicic acid
Measure blood-glucose levels of each rat after 16 weeks

Literature Cited