HERBAL EXTRACT AND TYPE I DIABETES - A CAUTIONARY TALE

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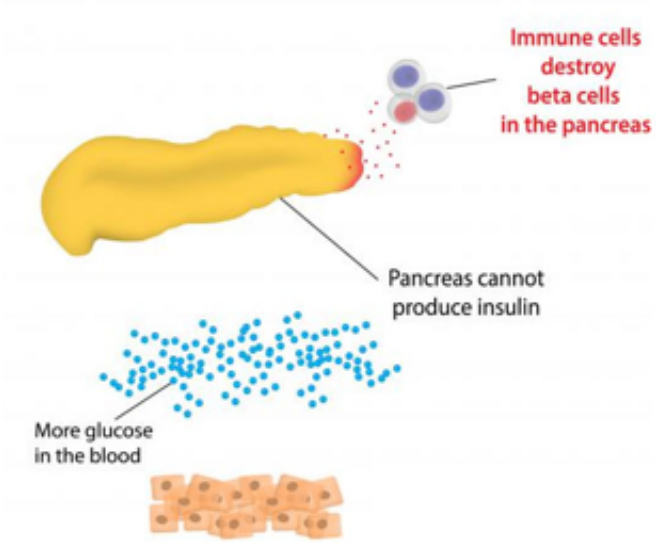
TYPE 1 DIABETES (T1D)

T1D is a T-cell-mediated and -dependent autoimmune disease

Pathogenic T-cells mediate the attack of insulin producing beta-cells in the pancreas, leading to no insulin production



Retrieved from: www.uai-ccd.com/type-1-diabetes/

Consequences:

1. High blood sugar (hyperglycemia)
2. Lifelong dependency on insulin therapy
3. Financial burden of T1D-associated care
4. No preventative strategy

T-CELLS & T1D

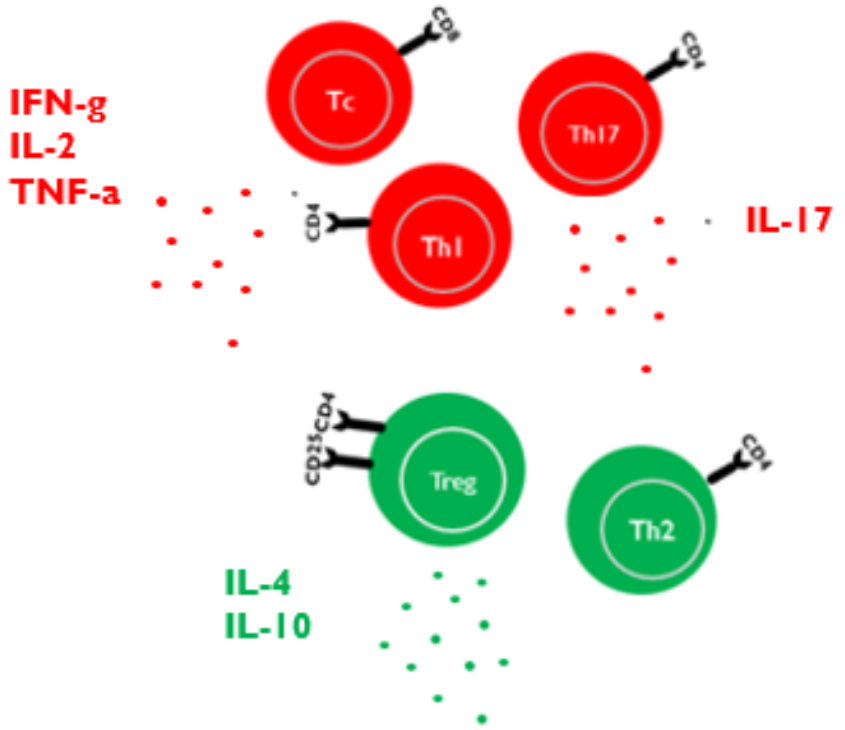
3 populations of T-cells

T-cytotoxic

T-regulatory

T-helper: Th1, Th2, Th17

In T1D, these populations can be pathogenic or protective



GARCINIA KOLA

Cultural and medicinal staple in West and Central Africa

Active compounds in *Garcinia kola* seed extract (GKE) have been implicated in numerous physiological benefits

- Hypoglycemic (Adedara, et al. 2014, Adaramoye, et al. 2012)
- Anti-inflammatory (Ayepola, et al. 2013)

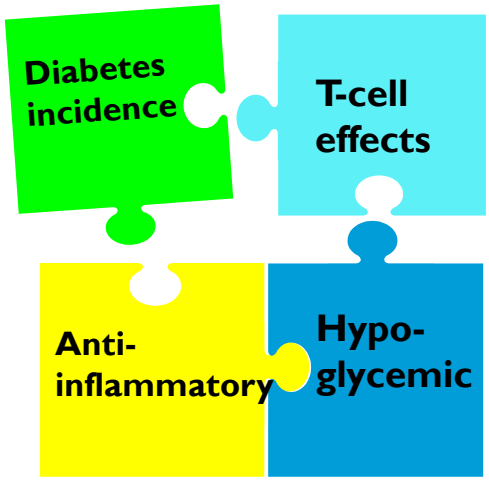
Retrieved from: https://www.pinterest.com/pin/481181541402110 3/?lp=true

Retrieved from: https://www.exportersindia.com/mswanetrading-pty-ltd/garcinia-bitter-kola-nuts-2560775.htm

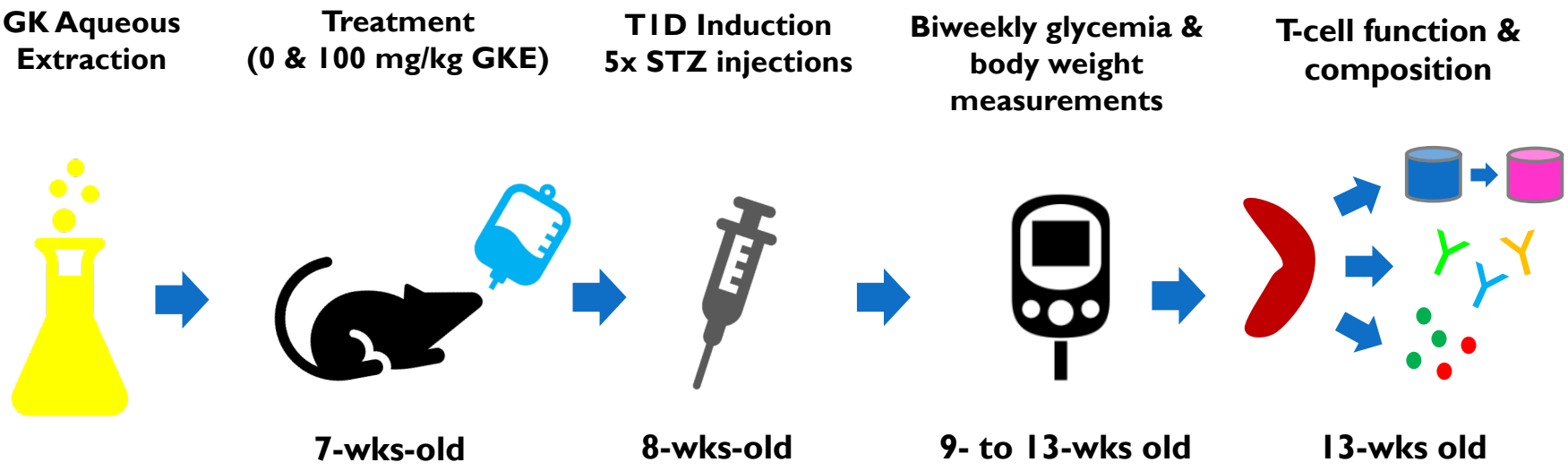
RESEARCH OBJECTIVE

To investigate the effects of GKE on the development and severity of T1D in an experimental mouse model

Hypothesis: GKE will **prevent** the development and attenuate the severity of T1D by decreasing pathogenic T-cell populations



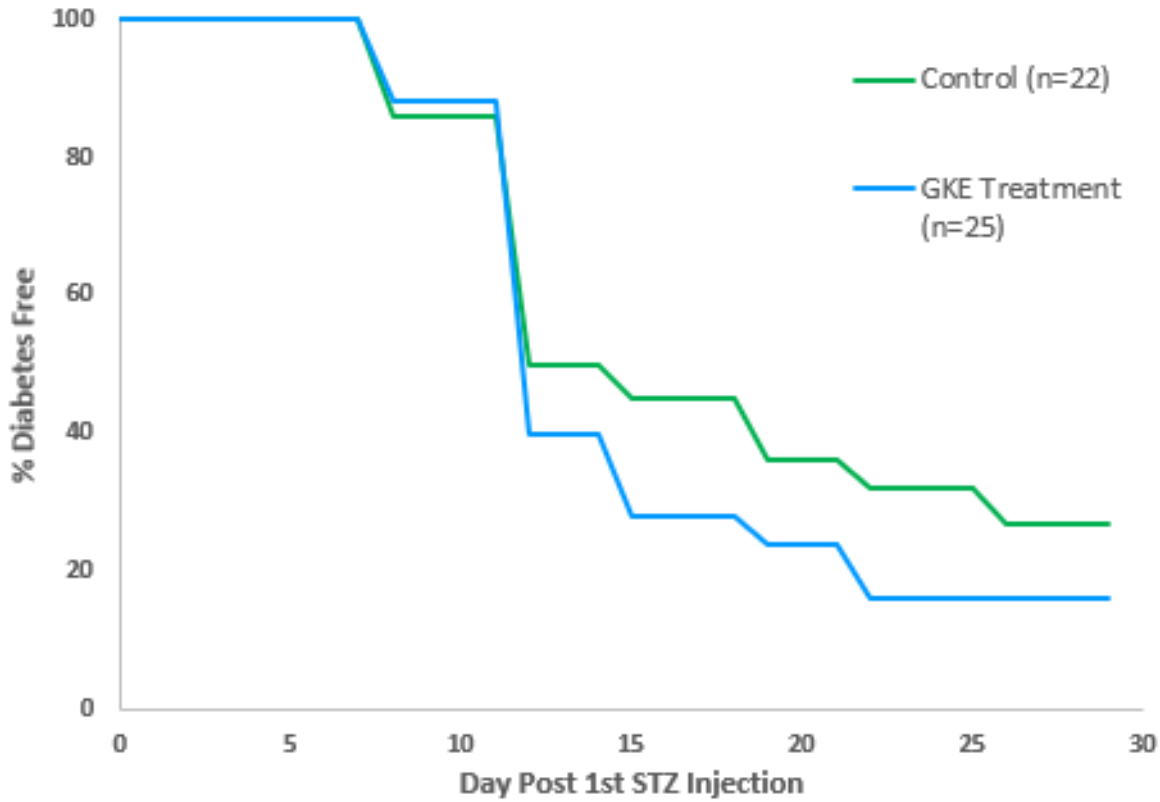
EXPERIMENTAL DESIGN



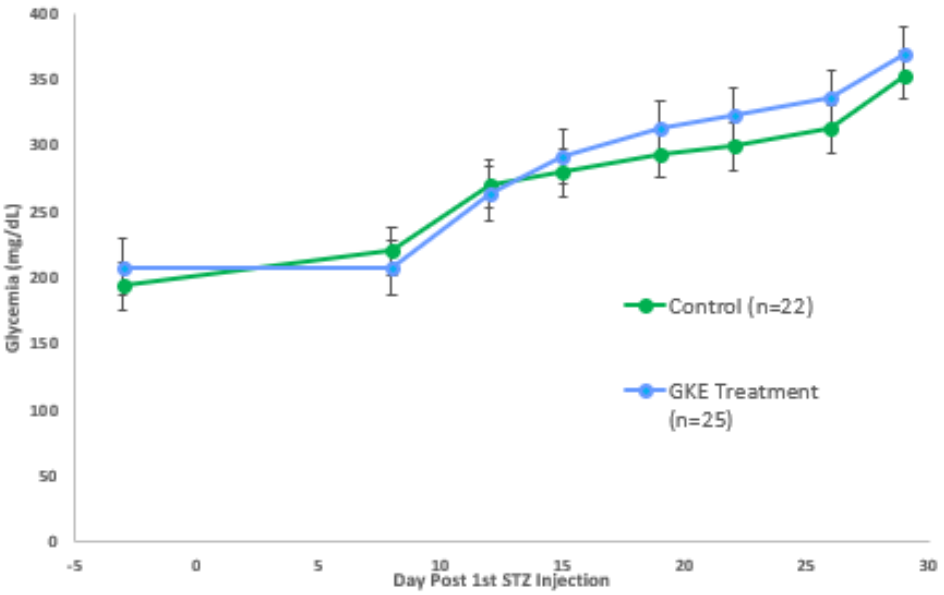
RESULTS*

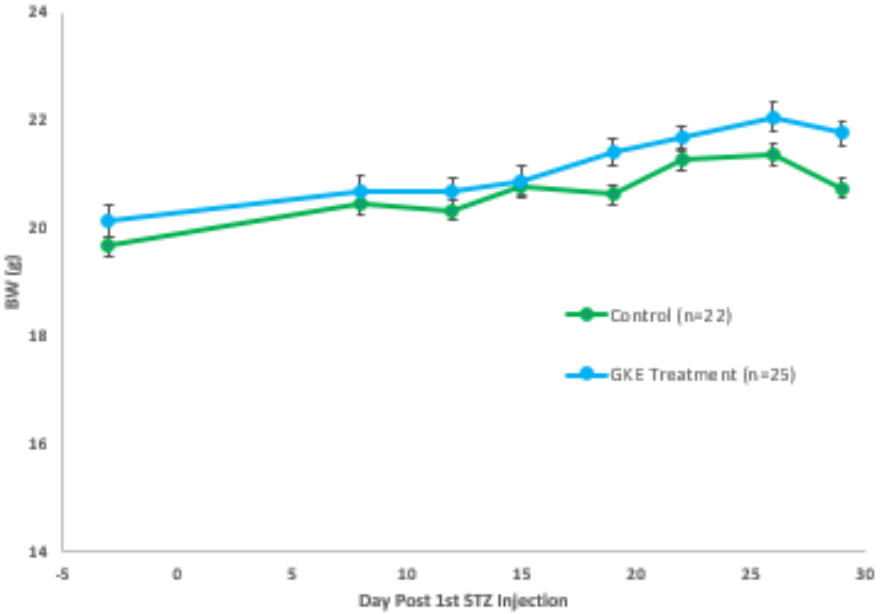
*Preliminary results

DIABETES INCIDENCE

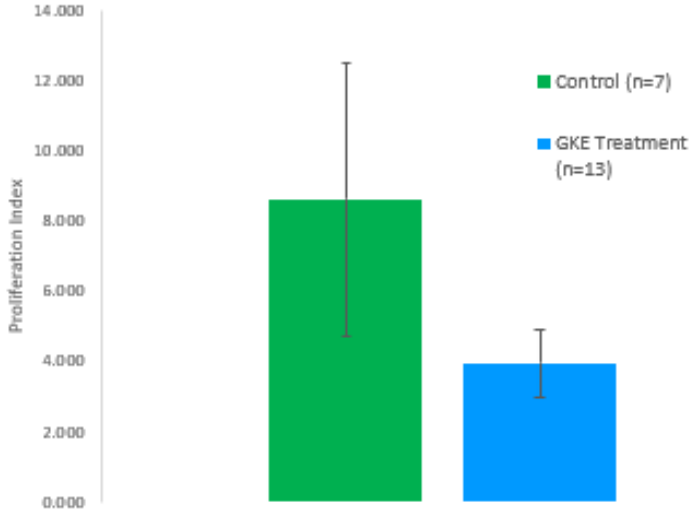


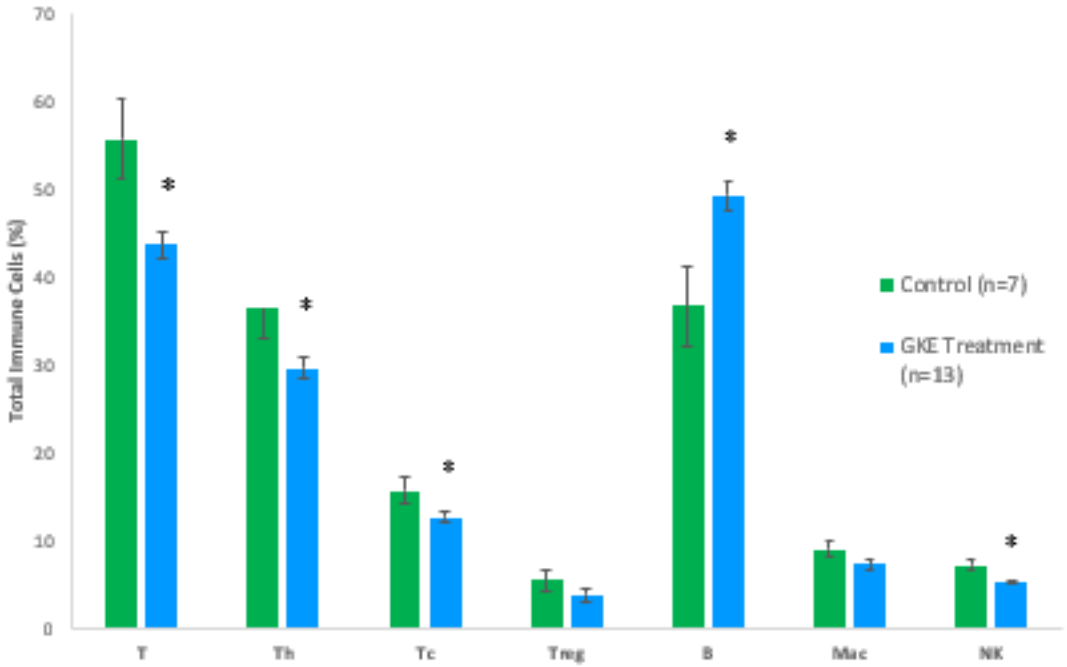
GLYCEMIA & BODY WEIGHT



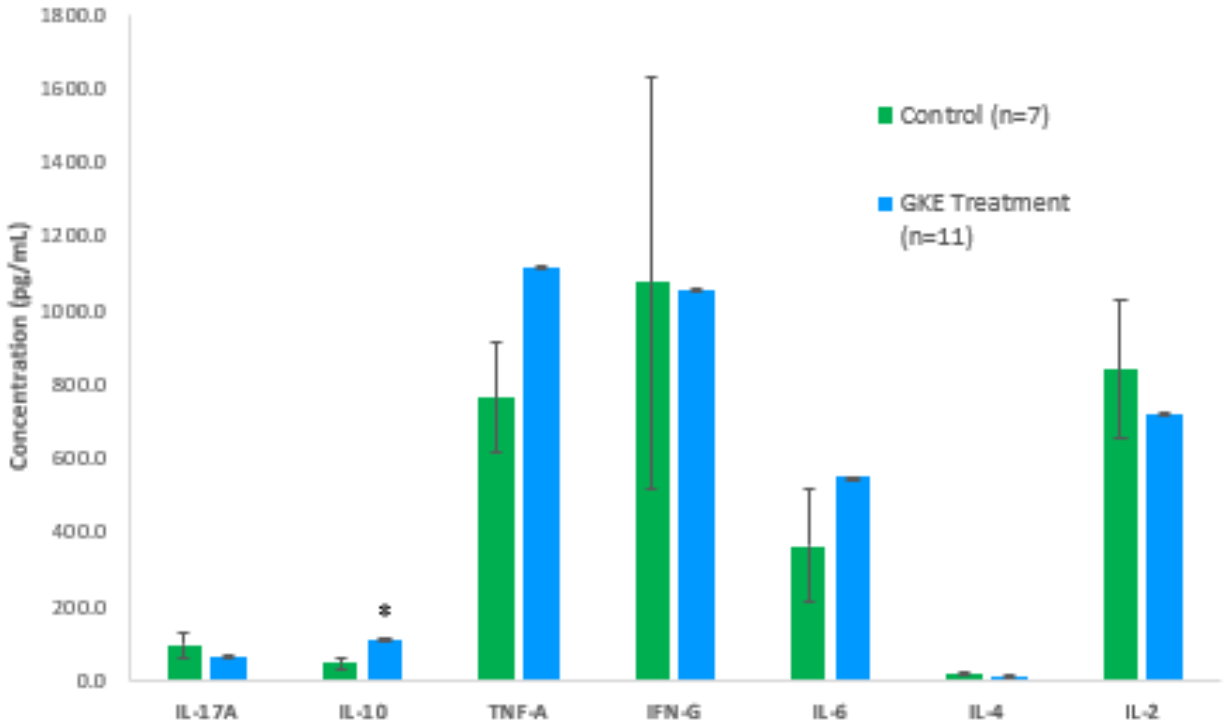


T-CELL ANALYSIS





CYTOKINE PROFILE



RESULTS SUMMARY

No significant effect on glycemia or body weight

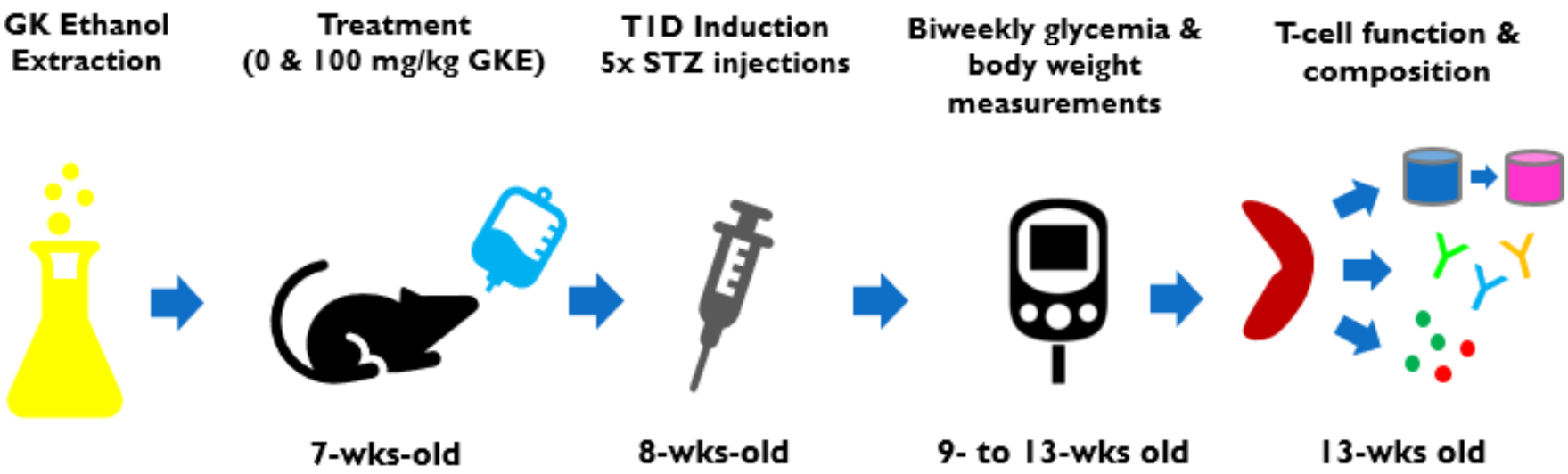
No significant effect on diabetes onset or incidence

No significant effect on T-cell proliferation

T-cells and their subtypes

Pro-inflammatory cytokines

EXPERIMENTAL DESIGN



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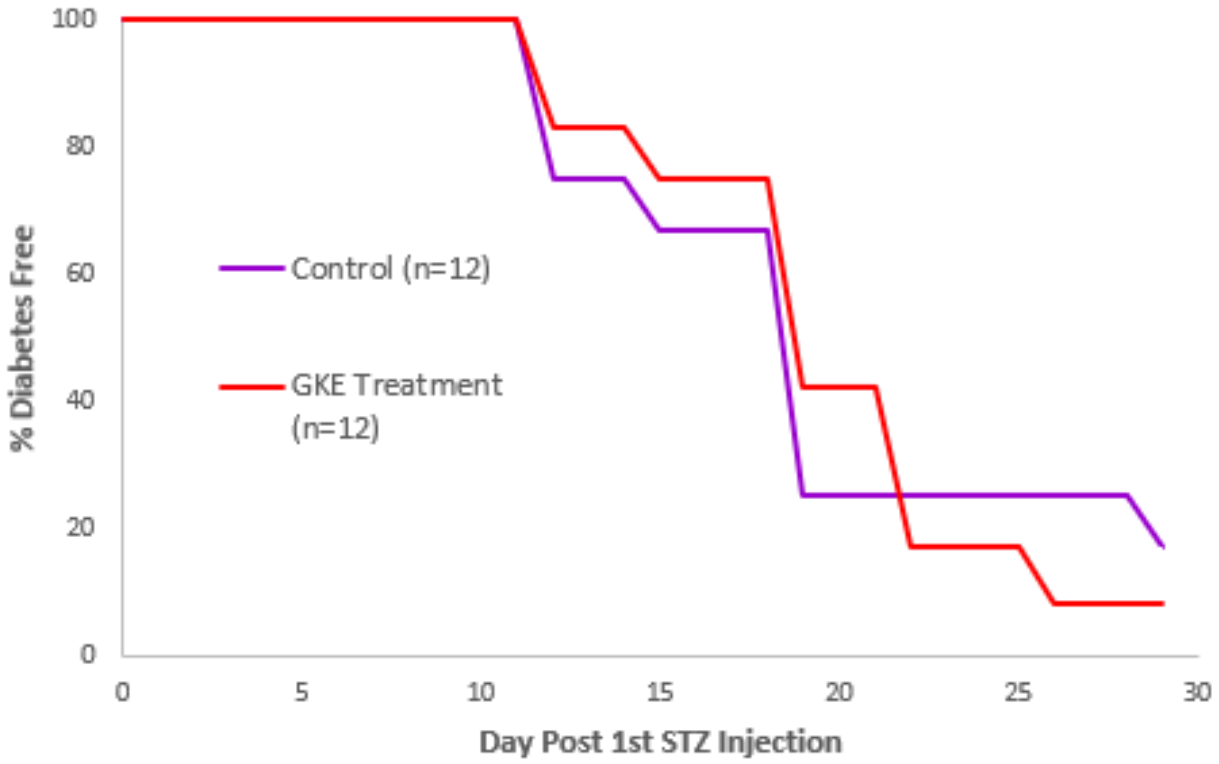
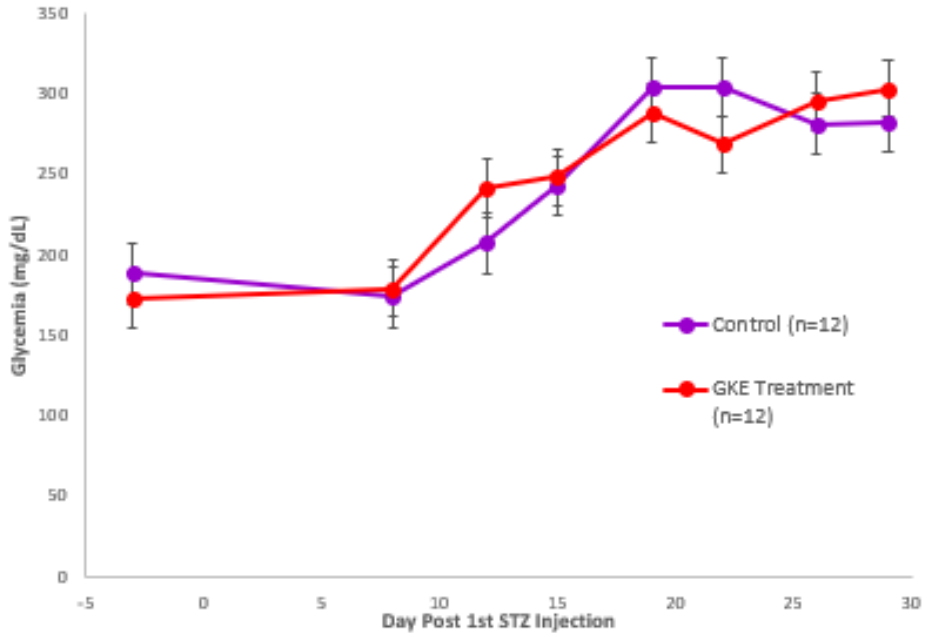
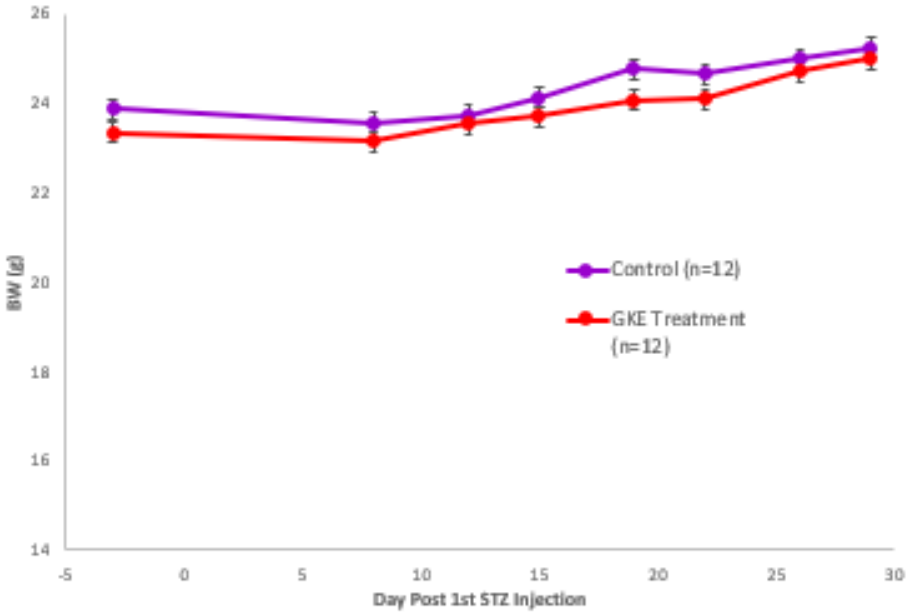
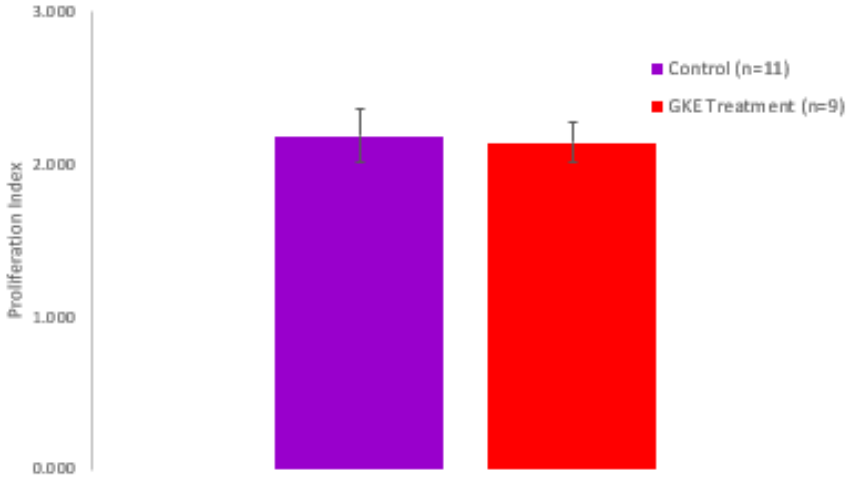


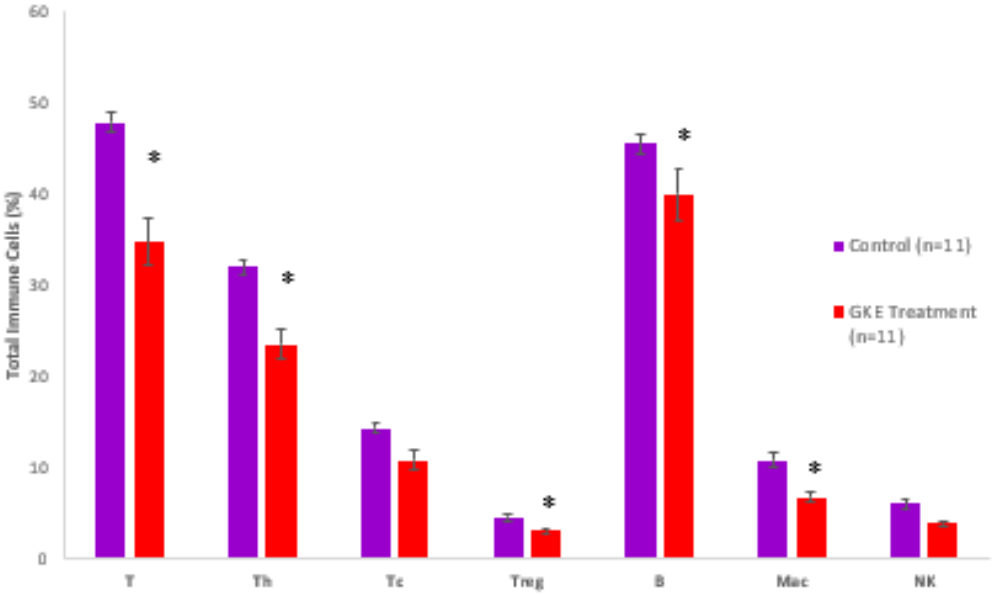
GLYCEMIA & BODY WEIGHT





T-CELL ANALYSIS





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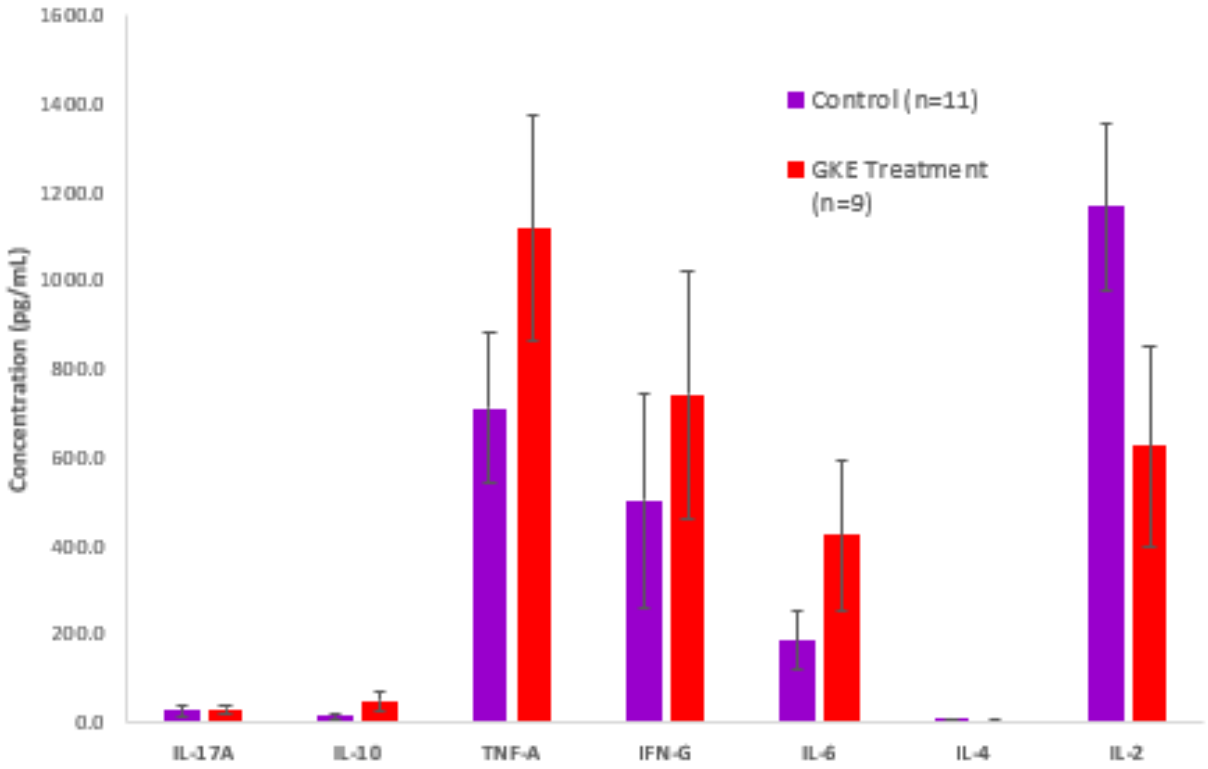

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CONCLUSION

GKE treatment did not affect diabetes development and severity, while significantly reducing T-cell populations, and potentiating their pro-inflammatory response during T1D development in a mouse model.

These results do not support GKE treatment for the preventative efforts in T1D.

CAUTIONS

Exercise caution when consuming herbal products

Mouse vs human data

- More research needs to be performed
- More stringent publishing standards

REFERENCES

Adaramoye, O.A., & Adeyemi, E. O. (2006). Hypoglcaemic and hypolipidaemic effects of fractions from Kolaviron, a biflavonoid complex from *Garcinia kola* in streptozotocin-induced diabetes mellitus rats. *Journal of Pharmacy and Pharmacology 58,* 121-128. Doi: 10.1211/jpp.58.1.0015

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