Glucotoxity

Glucose toxicity (or glucotoxity) means a decrease in insulin secretion and an increase in insulin resistance due to chronic hyperglycemia. It is now generally accepted that glucose toxicity is involved in the worsening of diabetes by affecting the secretion of β-cells.

Sept 7, 2009 Problems associated with glucose toxicity: Role of hyperglycemia – NCBI <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2738809/>

* Chronic high blood sugar levels “jam up everything”
  + insulin resistance gets worse, so insulin works less well
  + pancreas releases less insulin including in response to meds that stimulate insulin secretion (the beta cells are still there and have capacity to make insulin but are jammed up/blocked so that they can’t make or release the insulin when the BGs are chronically high)
  + worse IR and less endogenous insulin release 🡪 make high blood glucose levels even higher
  + poorer response to medications
* Can sometimes require high doses of insulin to “break” this “jammed up” Gluco-toxic state (have seen SGLT2i med help with this as well in the appropriate patient – not someone with T1DM or very catabolic state)
* then they often need less insulin or may not even need insulin as they become more responsive to meds and their own residual beta cells can again make and release some insulin and their cells respond better to insulin and other meds