

**First phase release coefficient of insulin in
subjects with normal glucose tolerance on
glucose infusion analyzed by computer
simulation**

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摘要

Abstract

We report here a mathematical model using computer simulation to solve the phase fractionation coefficient (f) of instantaneous insulin release on glucose infusion. By extensive model testing with the cited parameters obtained from the literature, the values of the factor f were shown to lie in range of 0.93 ± 0.02 (mean \pm 2S.D., $n = 15$), indicating that the high pulsatile bolus of glucose by i.v. infusion may trigger acute insulin release (AIR) corresponding to a fraction of more than 90% of the stored insulin release in the first phase from the secretory granules of pancreatic β cells. In addition, the value of the factor f was shown to be independent of both the glucose infusion method and the non-insulin-dependent uptake of glucose.