Is it important to reduce inter- and intra-individual variations to explore insulin sensitivity?

Est-il important de réduire les variations inter- et intra-individuelles pour une exploration de la sensibilité à l’insuline ?

Keywords: Insulin-sensitivity; Variations
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We read the letter from Borai et al. [1] with interest, and fully agree with their conclusion that it is important to be aware that trends of biological variation of simple indices of insulin resistance, in addition to those of insulin levels, are significantly influenced by the degree of glucose tolerance and by insulin-resistance-modifying medications, and that these factors could affect the reproducibility of indices of insulin resistance. In fact, the reproducibility of all simple indices of insulin resistance will depend on the parameters included in their calculation. For example, the Revised-QUICKI, which includes non-esterified fatty acids in its formula, is not valid when subjects are under caloric restriction [2], while different indices capture different aspects of insulin resistance [3,4]. Thus, in addition to performance in measuring insulin sensitivity, the reproducibility and available validations are important factors when choosing an index.

What can we do to further minimize the between- and within-individual variations of metabolic parameters used to assess insulin resistance? The first essential step is to standardize insulin assay, as the current variations preclude any comparisons between studies; it is our hope that such a barrier will be resolved soon [5]. In addition, attention should be focused on controlling and standardizing dietary intake (no caloric and carbohydrate restriction), physical activity (no unusual exercise) and duration of fasting for all methods that either measure (euglycaemic–hyperinsulinaemic clamp) or evaluate (OGTT or fasting indices) insulin resistance. Unfortunately, such precautions are either not taken or not provided for in numerous studies. Further research should address these aspects and investigate whether or not intra- and inter-individual variations can be further reduced and/or whether or not the numerous prerequisite precautions to appropriately estimate insulin sensitivity can be simplified with no significant impact on findings.

Conflicts of interest

The authors do not have any conflicts of interest to declare.

References


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