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Letter to Editor

The Assessment of Meal Pattern

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I presented the physiological function of Initial Hunger to EB to explain current diabetes/fattening epidemics and to offer the possibility of contrasting their current spread by exploiting physiological functions [1]. The presentation in San Diego (014) was followed by an exceptional applause although part of the presented data were obtained by a portable device. These devices are notoriously unreliable for blood glucose measurement (BG). I do not agree on this unreliability.

Single BG measurements are inconsistent, the BG wavering destitute meaning to the measurements. The liver delivers glucose into blood every 12 minutes with 10% changes. Physical activity, a gram of bread, a heavy concern, all significantly increase BG. Fasting standardization is ineffective. We do not know the onset of fast as well as the end of the post-absorptive period. A major factor in BG is energy balance that fluctuates with ambient and climate. An idea of BG levels may better be drawn by the mean of many well standardized measurements in subsequent days. Sampling blood glucose within 15 minutes before the meal seemed a sufficiently definite and meaningful metabolic moment: just before an increase in energy availability that subverts metabolic rate and many functions [2-5]. This metabolic moment informs us about previous intake exhaustion, i.e. on the abundance of last meals in comparison to the expenditure between meals. Single BG measurements in subsequent days were incorporated into a collective, weekly assessment (Mean BG). This incorporation was consistent in a given subject because of the thin confidence interval of preprandial BGs within the same person [6,7]. At recruitment, the BG means of 120 investigated subjects showed a mean confidence interval of 3.84 mg/dL at $P < 0.05$. By itself, this small confidence interval suggests reliability. We could stratify the 120 subjects in ten thin strata [6]. Each stratum contained subjects without differences in Mean BG that instead were significant from all other strata. We might say that each subject was imprisoned in his/her own stratum of habitual intake during free choices and maintained a steady meal pattern to have the same BG (energy availability) before meals [6-8] and during activity. The Mean BG represents also an assessment in the pathogen development toward diabetes and this assessment intrigues everybody [6-8]. An external teaching intervention was able to subvert fattening/insulin resistance that otherwise would have persisted [6-10]. Here emerges the value of Mean BG. It shows the habitual level of energy availability of the subject. The high values cause unwanted, pathogen reflexes. The main pathogen reflex is the depression of gastrointestinal functions and the development of an overall state of immune activation [6-10]. We have demonstrated a depression of absorption by administering xylose to experimental animals as well as to human voluntaries when the energy expenditure was high in a cold environment as compared when the expenditure was low [3-5]. High total cholesterol, high triglycerides, low HDL cholesterol, high uric acid, high basal insulin, HOMA and insulin responses during Glucose Tolerance Tests (GTTs) are correlated with high Mean BG [6-10] to form the metabolic syndrome [10]. The Mean BG gives us the degree of abnormal elevation of energy availability, indicates the faulty meals and shows the completeness of the correction after changes in intake. Assessment of Mean BG protects the subject against the fear of hypoglycemia, an important factor in excess intake promotion. Overweight subjects were bizarre, sometimes they engaged in food restriction at recruitment and were incapable of any further decrease after training. In our hands, the measurements by a portable device were reliable. We measured BG by a portable potentiometer for whole BG measurement with the hexokinase method: Glucocard Memory; Menarini diagnostics; Florence, Italy. The adult subject had to personally measure BG with the portable instrument against the autoanalyzer in the lab as he/she did at home. The autoanalyzer obtained a mean ± SD of 89.9 ± 11.3 mg/dL (N = 85). Subjects measured 89.0 ± 12.5 mg/dL. The mean difference (0.9 ± 7.1) was not significant. On absolute values, the mean difference was: 5.7 ± 4.3 mg/dL with no bias. This new parameter of 21 measurements by portable device (Mean BG) was much, much more consistent in repeated

measurements than a single fasting BG by autoanalyzer. In scientific demonstrations [6-9], Mean BG (the mean of 21 preprandial measurements reported by 7 d food diaries) opened an incredible wealth of associations with diseases.

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Conflicts of Interest

No conflicts of interest.

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