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EC NUTRITION
Opinion

Conditioned Eating

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Introduction

The Milano conference [1] began with the histological observation that more than half immune cells of the human body are located In small intestine [2,3]. This observation suggested a guideline in nutrition: an eating that engages the immune cells as minimally as possible. Nutrients ought to remain in small intestine as little as possible to limit bacteria proliferation. A consensus on these basic findings might allow a consensus education in the world and a widespread wellbeing. We largely tested this hypothesis in diarrheic, malnourished children and adults and recovery was constantly successful [4-27]. The error in diarrhea rearing consisted in the adoption of conditioned eating in place of administering food by demand. The two different ways of feeding differed by 20% in energy intake, 15.5% in resting metabolic rate, 15.4% in total daily expenditure [8], about 15% in mean preprandial blood glucose (BG) in a week. In comparison with controls, clinical changes consisted in the earlier elimination of functional disorders and malnutrition, elimination of lipid imbalance and vascular risks and finally elimination of insulin resistance.

This achievement brings us again to our start point: elimination of the immune involvement associated with insulin resistance improves intestinal activity and eliminates diseases that characterize subclinical, overall inflammation. Conditioned eating appears to be as a pervasive error that is spreading fattening/diabetes throughout the globe.

NCS

The National Children Study (NCS) was conceived in the late 1990s and authorized by the US senate through the Children's Health Act of 2000 [20]. It was intended to be a prospective, epidemiologic, birth-cohort study- a "children's Framingham study." The study was catalyzed by rising rates of chronic diseases in children - increases in asthma, autism, birth defects, dyslexia, attention deficit-hyperactivity disorder, schizophrenia, obesity, and diabetes that were too rapid to be of genetic origin - and by growing concern over children's exposure during vulnerable stages of early development to hundreds of new and untested chemicals. At the end of the year 2014, the director of the National Institutes of health (NIH) terminated the NCS as currently not feasible [20]. While American Senate searched for polluters following lay press, we showed that conditioned intake was responsible of diabetes and fattening [14-16].

Fattening/Insulin resistance implies long periods of high Mean BG that is associated with reflexes depressing intestinal functions. The depressed functions foster microbiome alteration, arousal of immunogenic bacterial species, immune involvement and may allow rising rates of chronic diseases in children. In the year 2010, we published a collection of papers under the title: "Meal by meal dynamic energy balance in blood, Habits & Risks" [21]. Before searching for unknown pollutants we pointed our attention on a well-known, widespread, risky behavior: fattening/diabetes. The majority but not the unanimity of the ASN board refused the publication of my speech to ASN members. The main criticism consisted in my using BG measurements by portable devices, notoriously unreliable. I had 85 BG comparisons between portables and autoanalyzer. The autoanalyzer obtained a mean ± SD of 89.9 ± 11.3 mg/dL. 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 [16,17]. We also did not trust the use of fasting BG as a variable for inferences. We standardized the moment of BG sampling before the meals and found that this preprandial BG measurement had a confidence interval of 3.8 mg/dL in a given individual through 21 meals (a

week) and this variable was stratified in the population. The weekly variable was highly trustful and classified meal patterns on the energy availability in order to prevent unwanted reflexes and risks more efficiently than energy intake estimation [12-15]. With "Mean BG", the mean of 21 preprandial measurements, we attained the "Ubi consistam" that was necessary to achieve statistical, objective, scientific results and evaluate clinical developments.

IHMP

We trained a meal pattern in the rhythm: hunger, nutrient absorption, intestinal cleaning and again hunger (Initial Hunger Meal Pattern, IHMP). In this construction, we distinguished conditioned hunger from "hunger after meal suspension". We named the hunger that aroused after meal suspension as Initial Hunger (IH). We informed how to use this type of hunger. At recruitment, about one third of both the investigated children and the investigated adults showed Mean BG, insulin sensitivity and HbA1c that were similar to the values of subjects who after training complied with the instructions. This identity suggests that training IHMP is a resumption of a safe, normal eating pattern that aroused in the phylogenies. A technological artifact was instead the conditioned intake. In our findings, the sequence: conditioned intake, high preprandial BG (energy imbalance), fattening/Insulin/Resistance, global sterile inflammation and health risks appears to be widespread to 60% of children and adults [19-22]. Subjects at recruitment ignored their incompleteness of energy exhaustion and their comment was: "I would have known it earlier". They also ignored the immune deterioration by sterile inflammation and health risks that follow fattening/Insulin Resistance [4-17]. We personally have under-investigated the development of sterile inflammation. We have shown that bacteria proliferate in proportion to the permanence of food in the small intestine [22] and we have found a decrease of IgG plasma antibody against *Helicobacter pylori* and a prevention of *H. pylori* infection during IHMP [19,23]. A suppression of functional bowel disorders during IHMP also suggests elimination of sterile inflammation that develops during insulin resistance [6,10-14]. A large body of studies has shown the association of fattening/Insulin Resistance with a worsening of infections, chronic functional disorders, autoimmunity and allergies [3-8]. The initial sensation of hunger (IH), that may be learned after meal suspension, may be used to reproduce a meal by meal even balance [2].

Conclusion

Infant/mother pairs recognize easily IH without BG measurements [19,21,25]. Adults can learn the recognition in few days with the aid of preprandial BG measurements . Meals allowing three IH arousals per day are associated with an even energy balance and recovery of insulin sensitivity. This meal pattern may become the reference for normal energy intake and for normal/ideal body weight, reduce immune involvement by microbiome [18] and stop rising rates of chronic diseases in children -asthma, autism, birth defects, dyslexia, attention deficit-hyperactivity disorder, schizophrenia, obesity, and diabetes.

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