



## **FEEDING PATTERNS IN CHILDHOOD MODIFY THE LONG-TERM INSULIN AND LEPTIN LEVELS, ENERGY INTAKE AND BODY WEIGHT GAIN WITH FURTHER ALTERATIONS IN ANXIETY-RELATED BEHAVIOUR**

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Children malnutrition by excessive or insufficient eating is a worrying problem in our society because it has been associated to an increased risk of cardiovascular disease or diabetes in adulthood. Based on the "Predictive-Adaptative Response Hypothesis" and the "Early Protein Hypothesis", we considered the possibility that the consequences of infant feeding occur in terms of a continuum ranging from malnutrition to overeating. To test this hypothesis we submitted 6 groups of Wistar male rats divided first by the infancy diet and secondly by adolescence-adult diet. Children Diets (PND 22 - PND 43) were: C (standard chow), P (free choice between standard chow and a palatable food with 20% less proteins) or S (20% standard chow and 80% of palatable food with 40% less proteins); and adolescence-adults diets (PND 44 - death) were P or C diets to each previous group. We studied behavioral patterns of intake after weighing the animals and the food each week. We tested the anxiety-related behavior in adulthood by Elevated Plus Maze and Open-field tests. Finally, levels of leptin and insulin were determined by commercially available enzyme-linked immunosorbent assays (ELISA) kits (Raybiotech®, GA, USA, for insulin and Biovendor®, CZ, for leptin). Results show that S infancy group had less weight gain than C or P childhood groups in spite of eating more Kilocalories per Kilogram than all the other groups and show less anxiety-related behavior. On the other hand, P Childhood group had higher levels of leptin than the other groups when they also were P in the adult period and lower insulin levels when they were C in adulthood. Here, we show that early exposure to protein restriction can have long-term metabolic and behavioral consequences.

### **Biography**

The group of Neuropharmacology of Motivated Behavior is a credited Research Group of the Complutense University of Madrid, with a 20 year experience and more than 50 papers in international journals in different lines of research, including the role of the cannabinoid system in metabolic homeostasis, perinatal and postweaning food programming and the development of new medications for obesity.