

O-41 - INTRAVASCULAR FOOD REWARD

A.Oliveira-Maia¹, C.D.Roberts², Q.D.Walker³, B.Luo², C.Kuhn³, S.A.Simon², M.A.L.Nicolelis²

¹Champlimaud Neuroscience Program, Fundação Calouste Gulbenkian, Lisboa, Portugal, ²Department of Neurobiology, ³Department of Pharmacology and Cancer Biology, Duke University Medical Center, Durham, NC, USA

Introduction: We recently found that, in mice, independently of orosensory input, sucrose consumption is sufficient to condition the development of spout preferences and dopamine release in the ventral striatum.

Objectives: To clarify if the appetitive behavioral and dopaminergic responses to the postingestive effects of calorie-containing sugars reflect preabsorptive or postabsorptive events.

Aims: To understand if endovenous injection of glucose is sufficient to condition spout preferences and dopamine release.

Methods: Measurements of the behavioural, metabolic and neurochemical effects of the administration of glucose solutions, enterically, and in the jugular (JV) or hepatic-portal (HPV) veins of rats.

Results: High concentration glucose solutions administered in the JV were sufficient to condition spout preferences in a two-bottle behavioral task. Additionally, a low concentration glucose solution conditioned robust behavioral responses when administered in the HPV, but not the JV. Finally, using fast-scan cyclic voltammetry we found that, in accordance to behavioral findings, a low concentration glucose solution caused an increase of spontaneous dopamine release events in the nucleus accumbens shell when administered in the HPV, but not the JV.

Conclusions: The postabsorptive effects of glucose are sufficient to mimic the behavioral and dopaminergic responses that result from sugar consumption. Furthermore, glycemia levels in the HPV contribute more significantly for this effect than systemic glycemia, arguing for the participation of an intra-abdominal visceral sensor for glucose.