DOPAMINE RECEPTOR D2
DRD2 rs1800497

The rs1800497 SNP in the DRD2 gene has been highly studied with regard to behaviour. Researchers at the University of Toronto, who conducted the current study, have confirmed the link between the rs1800497 SNP in the DRD2 gene and behaviour, and further demonstrated how this SNP influences binge eating.

This study was carried out on English speaking, North American, obese binge eaters. The definition of the Binge Eating Disorder (BED) was in accordance with DSM-IV-TR, which reads: “recurrent episodes of binge eating in the absence of the regular use of inappropriate compensatory behaviours characteristic of bulimia nervosa.” The participants in the study were assessed for binge eating, hedonic eating, emotional eating and food cravings. In addition, they were genotyped for the rs1800497 SNP—the most frequently studied SNP known to influence the dopamine D2 receptor (DRD2).

**KEY FINDINGS:**

- Dopaminergic circuits are involved in the regulation of appetite and motivation.
- A/A individuals are more likely to engage in binge eating or other disordered eating behaviours leading to obesity.
- This behavior is worsened in a environment of abundant, highly palatable food.
- Such individuals are more likely to experience negative emotions such as loneliness and negativity, and are also more at risk of addiction or substance abuse.

Overall, the study showed that the A/A genotype of the rs1800497 SNP were significantly more likely to engage in binge eating, hedonic eating, emotional eating, and experience food cravings. Moreover, the study supports the hypothesis that BED has its origins in a hypersensitivity to reward, and that this hypersensitivity is biological, mediated through the DRD2 gene. However, individuals who engage in binge eating or similar disordered eating behaviours are more likely to do so if placed in an environment of abundant, highly palatable food.

Clinicians with A/A patients should counsel them to avoid places that sell such food, and to avoid having such food items in their house. They should also be aware that women are significantly more at risk, and tend to act to avoid negative emotions. There is also a risk of progression to substance abuse if the A/A genotype is combined with negative emotions.
The take home message for clinicians is: "The research is now remarkably clear that repeated consumption of highly palatable food, and intermittent periods of calorie restriction, can independently produce dopamine signaling changes in the brain, which promote an escalation of intake."

RESOURCES:
