

Sample Answer

Nicotine addiction can be explained by theories of brain neurochemistry, such as **Dani and Heinemann's (1996)** desensitisation hypothesis. This explains how nicotine creates addiction and tolerance, specifically focusing on the behaviour of nicotinic acetylcholine receptors (nAChRs) in the brain's reward pathways. It is believed that nicotine binds to nAChRs, specifically in the mesolimbic dopamine system which includes the ventral tegmental area and nucleus accumbens. This causes the release of dopamine in the mesolimbic system which activates the reward system in the brain. Initially nicotine activates the receptors causing a release of dopamine, which gives individuals a feeling of euphoria and pleasure and helps to relieve anxiety. However, with continued or rapid consumption usually through smoking, nicotine remains in the brain, causing these receptors to become 'desensitised'. This means they become less sensitive to stimulation and chronic desensitisation changes the way the brain naturally processes dopamine and can lead to cravings and subsequent addiction. Through repeated activation, more nicotine is required to create the same effect (tolerance) which results in cravings and formulation of addiction.

