



# Nicotine stresses you out!

**Caitlin Davies**

**E**very day in Malta, one person will die from a smoking-related illness. People usually begin smoking tobacco in their adolescence and addiction quickly follows. Quitting is hard and the majority are unsuccessful. Nicotine, with its crippling withdrawal symptoms, is to blame. Research suggests this component of tobacco can be more addictive than heroin. Smokers say that nicotine is pleasurable and enables them to concentrate and reduce their anxiety. Scientists think the opposite.

Research conducted by a team under the supervision of Prof. Giuseppe Di Giovanni demonstrated that nicotine in fact increases anxiety. Upon inhalation of tobacco smoke, nicotine creates a sense of relaxation due to the

release of the neurotransmitter dopamine in brain 'reward' centres. Smokers experience this whenever they light up. However, this temporary sensation soon gives way to withdrawal symptoms: craving and increased anxiety levels. The only way that these unpleasant symptoms can be reduced is by smoking another cigarette, perpetuating the addiction cycle. Smokers rarely link increased anxiety to their addiction. However, smoking increases stress and does not reduce anxiety but instead just covers the bad symptoms with a short-lived pleasant sensation.

Caitlin Davies (supervised by Prof. Giuseppe Di Giovanni) investigated the effect of nicotine on the rat brain. The lateral habenula is a small brain area involved in stress, anxiety, and depression. Davies investigated whether the lateral habenula was involved in nicotine-induced anxiety-like behaviour by conducting experiments on rodents with lesions of this brain region, which essentially inactivate it. When the lateral habenula

was not working, nicotine was unable to increase anxiety-like behaviour. These results suggest that the lateral habenula plays a key role in controlling nicotine-induced anxiety.

More research is needed to understand exactly what is responsible for these findings. Nevertheless, the study could help develop more effective therapies for people to stop smoking. These therapies would increase the unpleasant properties of nicotine so that the drug smokers once enjoyed would instead be undesirable. **T**

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