

Scientists find natural way to curb your greed

July 5 2010

(PhysOrg.com) -- University of Manchester scientists have discovered a naturally-occurring appetite suppressant that could be used to make a diet drug without side effects.

Professor Simon Luckman and Dr Garron Dodd believe the peptide hemopressin, which affects the reward part of the brain responsible for hedonistic behaviour, might treat some aspects of alcohol and drug abuse.

Dr Dodd, co-author of the findings published in the [Journal of Neuroscience](#), explains: “It has long been known that the rewarding aspects of feeding behaviour influence our appetite, so that sometimes we eat for pleasure rather than hunger. This is because the cannabinoid system in the brain - a component of the naturally-existing circuitry responsible for reward - is affected by chemicals that are termed ‘agonists’ which bind to its receptors and increase the reward from feeding.

“One such agonist is cannabis - it hijacks the cannabinoid system and leads to what is colloquially referred to as ‘the munchies’. Similarly, when you fast, the brain causes an increase in naturally-occurring agonists. This results in increased hedonic impact so that when you do eat, food tastes better.

“Conversely when ‘[antagonists](#)’ bind to the receptors of the cannabinoid system, it decreases the reward from feeding. By reducing hedonistic

feeding, it is possible to help people lose weight by quenching the desire to eat.”

A synthetic antagonist, Rimonabant, was developed six years ago and marketed as an anti-obesity treatment. As well as acting in the brain to reduce feeding it also acted in peripheral tissues to reduce fat deposition. However, despite its efficiency at reducing body weight in humans, it was later withdrawn from the market due to undesirable side effects such as depression and increased [suicidal thoughts](#). Dr Dodd believes that naturally-occurring hemopressin may not cause such side effects.

The scientists in the Faculty of Life Sciences, gave mice hemopressin and monitored feeding and other behaviours. They found that while feeding behaviour decreased, importantly, other behaviours were not affected by the natural antagonist. With the synthetic antagonist, feeding behaviour decreased, but other non-specific behaviours, such as grooming and scratching increased. This shows that, unlike the synthetic antagonists, hemopressin specifically affected [feeding](#), acting to potentially reduce hedonistic behaviour without some of the “off-target” effects.

“We now plan to investigate this further,” Dr Dodd adds.

“This is a newly discovered peptide and we do not know yet exactly where it is expressed in the brain. We also need to find out whether it has prolonged actions on body weight. Finally, while our findings are an indication of safety, this cannot be immediately extrapolated to humans. This discovery does however offer new insights into how the brain controls appetite, and opens new avenues by which to manipulate this [brain](#) circuitry and aid the development of anti-obesity treatments.

“The existence of naturally-occurring agents, such as hemopressin, provides attractive targets for drug companies as they may be ‘safer’ in

the long term. In addition, as peptides are modified quite easily there is the potential to target their uptake by the body to reduce undesirable [side effects](#).”

More information: ‘The Peptide Hemopressin Acts through CB1 Cannabinoid Receptors to Reduce Food Intake in Rats and Mice’, *Journal of Neuroscience*.

Provided by University of Manchester

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