

ncpic e-zine

august 2009

national cannabis
prevention and
information centre

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what's
new in
cannabis?

what's new in cannabis?

NCPIC has recently added a new page under its 'Links' section: The Cannabis Legislation page. To access cannabis-related legislation and other relevant information across all Australian states and territories, please go to the following link: <http://ncpic.org.au/ncpic/links/legislation/>

The links found on this page were kindly compiled by Associate Professor Simon Lenton from the National Drug Research Institute in Perth.

director's report

Jan Copeland (PhD)
(Professor/Director, NCPIC)

This month has been especially busy as we prepare for our inaugural conference early in September in Sydney. One of the speakers at the upcoming meeting attracted media attention this month with a very interesting animal model paper on re-intoxication with THC, following abstinence when stressed or starved. Professor Iain McGregor and his colleagues at the School of Pharmacology at Sydney University recently published the paper in the *British Journal of Pharmacology*¹ which was inspired by a small number of forensic reports of extremely high levels of THC in the blood of accident victims, in great stress pre-mortem, where witnesses reported they had been abstinent from cannabis for some time.

The findings are reported in the media section of this e-zine with the headline "can dieting lead to a positive test for cannabis?" I was asked to comment for a report on the study published in the *Sun Herald* and noted that frequent cannabis users who make healthy lifestyle choices that include quitting cannabis in association with a calorie restricted diet and exercise regime need to be aware that they may still test positive for cannabis and that people for whom a negative test is critical in their workplace should have a confidential test done by their GP to be sure.

I received an irate email this month demanding that I correct this inaccuracy in the media for the sake of NCPIC credibility. The correspondent wrote (in part) "*This is false. THC metabolites are not psychoactive. Only delta-9 tetrahydrocannabinol is psychoactive.*"

dg-THC is not stored in body fat. Over 4-6 hours post ingestion, dg-THC is metabolised into compounds like 11-OH-delta 9-THC, 8 beta 11-diOH-delta 9-THC and 11-nor-delta 9-THC-9-COOH, known commonly as metabolites, which are not psychoactive. ...The scenario of re-intoxication from release of stored, non-psychoactive THC metabolites is simply not possible. It is the same as claiming you can run your car on what comes out of the tailpipe." The reason I reproduce this fallacious claim is to alert readers to question the evidence and not be seduced by strings of scientific and quasi-scientific jargon passed off as science. To set the record straight and paraphrase Professor McGregor's response: it is simply wrong to claim that THC is not stored in fat. There are many studies going back to 1973 proving that it is, including fat biopsies of human cannabis users showing high levels of THC in their fat. There are also studies involving radioactive THC showing clearly its high concentration in fat tissue after administration to laboratory animals. The correspondent is also wrong in claiming that all of these metabolites are non-psychoactive; 11-OH-THC certainly is. This is an interesting area of future human research with significant implications across the board.

The topic also ties in well with the release this month of the poster, *Avant Card*, mouse pad and bumper stickers on cannabis and driving: *Don't Dope and Drive*. The materials generated a number of media stories and positive feedback. Many thanks to Morag Millington who managed the distribution strategy which has seen thousands taken up by police, GPs, vehicle insurance companies, libraries,

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research publications

Relevant publications examining issues to do with cannabis that have been published in the last month include the following:

Cooper, Z.D. & Haney, M. (2009).

Comparison of subjective, pharmacokinetic, and physiological effects of marijuana smoked as joints and blunts. *Drug and Alcohol Dependence* 103, 107-113.

Di Marzo, V. (2009). The

endocannabinoid system: Its general strategy of action, tools for its pharmacological manipulation and potential therapeutic exploitation. *Pharmacological Research: The Official Journal of the Italian Pharmacological Society* 60, 77-84.

Dingwall, K. & Cairney, S. (2009). The importance and challenges of assessing cognition in Indigenous Australians. *Australas Psychiatry* 17 Suppl 1, S47-50.

Dumont, G.J., Kramers, C., Sweep, F.C., Touw, D.J., van Hasselt, J.G., de Kam, M., van Gerven, J.M., Buitelaar, J.K., & Verkes, R.J. (2009). Cannabis coadministration potentiates the effects of "ecstasy" on heart rate and temperature in humans. *Clinical Pharmacology and Therapeutics* 86, 160-166.

Edwards, C.R., Skosnik, P.D., Steinmetz, A.B., O'Donnell, B.F., & Hetrick, W.P. (2009). Sensory gating impairments in heavy cannabis users are associated with altered neural oscillations. *Behavioral Neuroscience* 123, 894-904.

Filbey, F.M., Schacht, J.P., Myers, U.S., Chavez, R.S., & Hutchison, K.E. (2009). Marijuana craving in the brain. *Proceedings of the National Academy of Sciences of the United States of America* 106, 13016-13021.

Gorman, D.M. & Huber, J.C. Jr. (2009).

The social construction of "evidence-based" drug prevention programs: A reanalysis of data from the Drug Abuse Resistance Education (DARE) program. *Evaluation Review* 33, 396-414.

Hartman, C.A., Hopfer, C.J., Haberstick, B., Rhee, S.H., Crowley, T.J., Corley, R.P., Hewitt, J.K., & Ehringer, M.A. (2009).

The association between cannabinoid receptor 1 gene (CNR1) and cannabis dependence symptoms in adolescents and young adults. *Drug and Alcohol Dependence* 104, 11-16.

Huestegge, L., Radach, R. & Kunert, H. (2009). Long-term effects of cannabis on oculomotor function in humans. *Journal of Psychopharmacology* 23, 714-722.

Malone, D.T., Jongejan, D. & Taylor, D.A. (2009). Cannabidiol reverses the reduction in social interaction produced by low dose Delta(9)-tetrahydrocannabinol in rats. *Pharmacology, Biochemistry and Behavior* 93, 91-96.

Nagel, T., Robinson, G., Condon, J., & Trauer, T. (2009). Approach to treatment of mental illness and substance dependence in remote Indigenous communities: Results of a mixed methods study. *The Australian Journal of Rural Health* 17, 174-182.

Pandolfo, P., Vendruscolo, L.F., Sordi, R., & Takahashi, R.N. (2009). Cannabinoid-induced conditioned place preference in the spontaneously hypertensive rat – An animal model of attention deficit hyperactivity disorder. *Psychopharmacology (Berl)* 205, 319-326.

Realini, N., Rubino, T. & Parolaro, D. (2009). Neurobiological alterations at adult age triggered by adolescent exposure to cannabinoids. *Pharmacological Research: The Official Journal of the Italian Pharmacological Society* 60, 132-138.

Roser, P., Gallinat, J., Weinberg, G., Juckel, G., Gorynia, I., & Stadelmann, A.M. (2009). Psychomotor performance in relation to acute oral administration of Delta9-tetrahydrocannabinol and standardized cannabis extract in healthy human subjects. *European Archives of Psychiatry and Clinical Neuroscience* 259, 284-292.

Tucker, P. (2009). Substance misuse and early psychosis. *Australasian Psychiatry: Bulletin of Royal Australian and New Zealand College of Psychiatrists* 17, 291-294.

commentary on research marijuana craving in the brain – a comment on Filbey et al (2009)

Dr David Allsop

Craving is a key behavioural component of addictions, often contributing to relapse during quit attempts. Modern neuroimaging techniques have studied craving in a wide variety of substances of abuse, and identified the brain regions that activate during craving to be the areas known to control processes of reward and motivation.

Filbey et al (2009) wanted to know if the same is true for cannabis. They asked their volunteers (regular heavy cannabis smokers) to stop smoking cannabis for 3 days before showing them photos of a pipe whilst they scanned their brains using functional magnetic resonance imaging (fMRI). The pipe photos activated the same reward pathways in the smoker's brains as are activated for other substances of abuse as well as during craving in problem gamblers. This is an important finding as it demonstrates that craving for all substances of abuse, including cannabis, occurs via the activation of common brain regions controlling our reward and motivation behavior. Such information

could be used to design measurement tools for predicting relapse outcomes and quantifying the efficacy of substance problem treatment interventions. The finding also demonstrates that cannabis is no different to other substances of abuse in terms of the way that it elicits craving and activates common reward pathways in the brain that influence use and dependence behaviours.

Filbey, F.M., Schacht, J.P., Myers, U.S., Chavez, R.S., & Hutchison, K.E. (2009). Marijuana craving in the brain. *Proceedings of the National Academy of Sciences of the United States of America* 106, 13016-13021.

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Each issue we will examine some of the cannabis-related stories that have received media attention across the country. The headlines are listed below in bold, with a short summary and/or commentary regarding the content of the news story beneath.

If you are interested in obtaining a copy of a particular story, please contact Clare Chenoweth at c.chenoweth@unsw.edu.au

news just in: you're all right!

jmag: August, 2009

Triple J's magazine, *jmag* surveyed its 18-25 year old readers with many results varying markedly from common stereotypes held about Generation Y. One such variation was the finding that of the respondents, only 14 per cent were regular cannabis users and 42 per cent "had never touched the stuff."

can dieting lead to a positive test for cannabis?

New Scientist: August 8, 2009

A study conducted by Professor Iain McGregor and Dr Jonathon Arnold of Sydney University and accepted for publication by the *British Journal of Pharmacology* deals with the question of whether "stored THC can be released at a later date in situations where the body's fat is rapidly broken down."

In an experiment with rats, it was found that rats injected with THC for ten days straight, followed by two days with no THC, and then deprived of food for 24 hours "had double the blood level of THC acid, a metabolite of THC, compared with the controls." Anecdotal evidence of blood testing finding "spikes in blood cannabinoid levels in people who have not taken the drug recently but have experienced extreme stress or rapid weight loss" is something that further research may help to explain. Results from such research may impact on "legal cases

in which athletes or employees have tested positive for cannabis but claim they haven't recently consumed it."

reefer gladness

New Scientist: August 8, 2009

A recent report in *The Socionomist* has found that "anti-drug laws in the US tend to coincide with high share prices, and legalisation with low...[and that] during economic downturns people have more serious worries, and view drug use as relatively innocuous."

dancers show off hip hop moves

Flinders News: August 12, 2009

A Hip Hop dance workshop run by the Mid North Rural Health Team in South Australia was featured in this article. NCPIC donated drink bottles for inclusion in the workshop's show-bags and was mentioned as a sponsor of the event in the article.

Brumby rejects push to reduce .05 limit

The Age: August 13, 2009

Victorian Premier, John Brumby has "rejected a push by a senior Victorian police officer to consider cutting the state's legal blood-alcohol limit to .02." Instead, he said the Government "would focus road safety on speed and illicit drug use, particularly marijuana."

drug addict battles on

Daily News: August 15, 2009

A 38 year old woman who has been a heavy cannabis user for at least a decade is featured in this article. She has been "diagnosed with both drug induced psychosis and schizophrenia" and explains that while many of her friends ceased their cannabis use after a period of use in their youth, she couldn't stop taking the drug. She feels the damage her cannabis use caused to her family relationships far outweighed other negative effects she experienced, such as "hallucinations and delusions."

how to drug proof your kids

Casterton News: August 19, 2009

A new program "helping parents to equip their children to make wise, healthy choices during their adolescent years, named *How to Drug Proof Your Kids*, is based on the fact that "parents and families play a crucial role in reducing the risk of harmful drug use." Federal Member for Wannon,

David Hawker says, "Statistics show that 70 per cent of 14 year olds have used alcohol and a third have used marijuana."

the supermodel mum's reputation goes up in smoke once again

NW: August 24, 2009

Supermodel Kate Moss is said to have smoked cannabis in front of her young daughter in this article in *New Weekly*. Professor Copeland, Director of NCPIC was asked to comment, and was quoted as saying "Using any illicit drug in front of young people is irresponsible." She goes on to say that "It is important that parents send the message that most people don't use these drugs and discuss the risks involved. This sort of behaviour by a parent normalises use and is highly problematic."

Nimbin's joint operation

Canberra Times: August 24, 2009

Nimbin's Hemp Embassy ran a protest outside Nimbin's hospital while Prime Minister, Kevin Rudd was visiting, with the hope of being able to "talk to Mr Rudd about what they say is a health issue; legalising cannabis in Australia." The group brought a "10m inflatable joint" to the protest to gain attention for their cause.

clinic to help cannabis users kick the drug habit

Maitland Mercury: August 28, 2009

Newcastle's Hunter Cannabis Clinic is launching an outreach service in Maitland "designed to help cannabis users quit their addiction or reduce their use of the drug." Hunter Cannabis Clinic Service manager Bill Robertson says, "Cannabis is the most widely used illicit substance in Australia, yet relatively few cannabis users present for treatment. Part of the reason for this is the belief among some users that cannabis is not a heavy drug." He says the service aims to "overcome some of the barriers preventing people from taking up treatment" such as not identifying with "users of other drugs such as heroin" and being worried about the "stigma attached to attending mainstream drug and alcohol services." The interventions offered will "largely be based on counselling using cognitive behavioural therapy and other therapeutic approaches."



what do we know?

cannabinoid hyperemesis syndrome what do we know?

A series of case reports have been published on a rare syndrome that is characterised by recurrent nausea and vomiting associated with abdominal pain and thought to be associated with heavy, chronic cannabis use. The symptoms have been reported to be alleviated temporarily by taking a hot shower or bath or more permanently by abstaining from cannabis use.

The first case report of what is referred to as cannabinoid hyperemesis, was published by health workers from a hospital in South Australia in 1996. At the time the authors involved assert that cannabis use was the cause of the presenting cyclical vomiting. It was not until a second report was published in 2004 that the association was made, this time with nine patients. This second paper spurred debate. Some authors considered the association with cannabis use presumptive given there have been so few cases reported when cannabis is the most commonly used illicit substance throughout the world. Since this second report in 2004, around 15 other case reports have been published from the United Kingdom, the Netherlands, Spain, Britain, New Zealand, America and Canada. It is difficult to explain, however, why the syndrome has never been previously noted by users or clinicians or why it is not more frequently noted if it is related to cannabis use.

Sontineni and colleagues (2009) have offered guidelines for the clinical diagnosis of cannabinoid hyperemesis. They suggest the essential features of the syndrome are a history of regular cannabis use for years; severe nausea and vomiting where vomiting recurs in a cyclic pattern over months; and resolution of symptoms after stopping

cannabis use. In addition diagnosis has supportive features of: 1) compulsive hot baths with symptom relief; 2) colicky abdominal pain; and 3) no evidence of gall bladder or pancreatic inflammation.

Various theories attempting to explain symptoms have been published. These theories fall into two themes; 1) dose dependent build up of cannabinoids and related effects of cannabinoid toxicity, and 2) effects on cannabinoid receptors in the brain and particularly in the hypothalamus (which regulates body temperature and the digestive system).

Although long-term cannabis use is associated with cannabinoid hyperemesis, organic disease or other co-occurring explanations of the syndrome should not be ruled out. To date the exact mechanisms by which cannabis affects appetite and the consequences of long-term, heavy cannabis use on the cannabinoid and other systems remain unknown. Further research is required before making conclusive statements that implicate cannabis use as the cause of cannabinoid hyperemesis in exclusion of other unknown contributing factors.

For more information please see a research brief on this topic on the NCPIC website (<http://ncpic.org.au/ncpic/publications/research-briefs>)

References

Sontineni, S.P., Chaudhary, S., Sontineni, V., & Lanspa, S.J. (2009). Cannabinoid hyperemesis syndrome: Clinical diagnosis of an underrecognised manifestation of chronic cannabis abuse. *World Journal of Gastroenterology* 15, 1264.

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commentary on research comparison of subjective, pharmacokinetic, and physiological effects of marijuana smoked as joints and blunts – a comment on Cooper & Haney (2009)

Dr Melissa M Norberg

Although many individuals prefer to smoke cannabis with tobacco, few researchers have examined the combined effects of the two drugs. This dearth of knowledge led Cooper and Haney (2009) to conduct a randomised, placebo-controlled study that evaluated the subjective, physiological, and pharmacokinetic effects of cannabis smoked as blunts and joints. In the study, blunts consisted of cannabis wrapped in cigar paper (which contained tobacco), whereas joints consisted of cannabis wrapped in cigarette paper (which did not contain tobacco). Twenty-four healthy, regular blunt smokers participated in six experimental sessions, in which cannabis dose and preparation was randomised across sessions. During these sessions, participants received either 0, 1.8, or 3.6% THC in the form of a blunt or joint. Participants were blindfolded and used plastic cigarette holders in order to block visual and tactile cues associated with each preparation. Using these methodologically sound procedures, participants were not able to reliably detect when they had smoked a blunt or a joint. THC plasma levels were significantly higher when active cannabis

was smoked as a joint rather than a blunt. In addition, participants reported liking joints more and believed that they were stronger and produced a better high than blunts. Carbon monoxide levels were higher after cannabis was smoked as a blunt compared to a joint, and this effect was more pronounced for women. These findings suggest that smoking blunts may increase cannabis use harms. Future research may benefit from examining why individuals regularly smoke blunts, despite reporting in experimental sessions that they produce a less desirable high when blinded to actual drug content. Developing such knowledge may help improve psychological treatments that target cannabis use.

Cooper, Z.D. & Haney, M. (2009). Comparison of subjective, pharmacokinetic, and physiological effects of marijuana smoked as joints and blunts. *Drug and Alcohol Dependence* 103, 107-113.

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director's report

education departments, university student unions, TAFEs and road traffic authorities in each state and territory. Along with other NCPIC materials they will also be used on the set of upcoming episodes of the series *Home and Away*. Factsheets and an order form can be downloaded at <http://ncpic.org.au/youngpeople/cannabis-and-driving>.

I look forward to seeing you at the meeting next month. If you can't make it, there will be a video of highlights on our website along with other materials.

Best wishes,

Jan

1. **Gunasekaran, N., Long, L.E., Dawson, B.L., Hansen, G.H., Richardson, D.P., Li, K.M., Arnold, J.C., & McGregor, I.S.** (2009). Reintoxication: The release of fat-stored Δ^9 -tetrahydrocannabinol (THC) into blood is enhanced by food deprivation or ACTH exposure. *British Journal of Pharmacology*. Published online 14 Aug.



NCPIC is a consortium led by the National Drug and Alcohol Research Centre and is an Australian Government Department of Health and Ageing initiative

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