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Recent evidences have consistently reported lower glutamate (Glu) levels in various brain regions, including the medial prefrontal cortex (mPFC), in chronic schizophrenia but findings in the early (EP) or in the prodromal phase of the disorder are equivocal. Although regular cannabis use has been associated with an increased risk of subsequent psychosis and with a perturbed Glu signalling, to date, the critical question of whether or not Glu abnormalities exist in EP and are related to cannabis use remains unanswered. Magnetic resonance spectroscopy was used to measure [Glu<sub>mPFC</sub>] of 35 EP subjects (18 of whom were regular cannabis users) and 33 healthy controls (HC). For correlative analysis, neuropsychological performances were scored by a comprehensive cognitive battery. [Glu<sub>mPFC</sub>] was lower in EP users comparing to both HC and EP non-users ( $P=0.001$  and  $P=0.01$ , respectively), while no differences were observed between HC and EP non-users. In EP users Glu declined with age ( $r=-0.46$ ;  $P=0.04$ ) but this relationship was not observed in non-users. Among neuropsychological profiles, working memory was the only domain that differentiates patients depending on their cannabis use, with users having poorer performances. In summary, our research revealed that cannabis use in EP is associated with Glu decreased levels, which are normally not seen in the early phase of the disorder. This finding is in line with previous <sup>1</sup>H-MRS studies in cannabis users without a psychotic disorder and sheds light for the role of cannabis use in the progression of the disease.

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#### EW0711

### Molecular targets of the ethanol and original anticonvulsant in the treatment of alcohol dependence

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*Objective* Chronic exposure to alcohol causes neuroadaptive changes in the brain, which leads to the recurrence of the disease. Promising in this area is to find new safe and effective pharmacological agents acting on molecular targets of influence of alcohol in the CNS.

*Methods* Experiments were performed on male rats Wistar and male mice (CBAx57Bl/6)F1.U. Experimental animals were formed alcohol dependence, based on long-term use of alcohol solution. Animals in a state of alcohol dependence were injected original anticonvulsant meta-chloro-benzhydryl-urea. We evaluated parameters orienting-exploratory behavior and emotional reactivity of the animals in the test “open field”, the cellular and humoral immune response. Properties of benzodiazepine receptors of

the brain examined radioreceptor method using selective ligands [<sup>3</sup>H]flunitrazepam and [<sup>3</sup>H]Ro5-4864.

*Results* Chronic exposure to ethanol resulted in a significant change in the parameters of the experimental animal behavior and emotional reactivity in the test “open field”, observed suppression of immune response (~40%), and increase in the number of receptors on 54.8–59.4% associated with reduced receptor affinity. Administration of meta-chloro-benzhydryl-urea led to the abandonment of the use of ethanol, recorded a correction of the above immunological and behavioral disorders due to alcohol intoxication. Properties of benzodiazepine receptors in the brain of experimental animals receiving the drug at a dose of 100 mg/kg for 14 days, indicators affinity and receptor density were close to the values in the control group.

*Conclusions* Anticonvulsant has a modulating effect on the functional activity of the nervous and immune systems, reduces compulsive craving for alcohol.

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#### EW0712

### Serotonergic modulation of cognition: An acute challenge

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*Abstract* Serotonin is well known to affect the multifaceted construct of impulsivity. Lowering brain serotonin levels is shown to increase impulsive choice in delay-discounting tasks (1) but improves response inhibition in stop-signal paradigms. (2) Administration of the antidepressant citalopram in healthy people increases tendency to perform go choices in a Go/No-Go task independent of outcome valence (3). It is rather unclear thought how serotonergic neurotransmission affects several aspects of cognition. We administered a single dose of 20mg escitalopram, a selective serotonin reuptake inhibitor, to 66 healthy participants, aged 18–45 years old, in a double-blind, randomized, placebo-controlled, parallel-groups study. Acute escitalopram administration had a beneficial effect on inhibitory control with reduced stop-signal reaction time observed in the treatment group. Participants made significantly more errors in a probabilistic learning task and had lower accuracy during the discrimination stage in an instrumental learning task thus indicating a learning impairment. More errors in the CANTAB intra-extra dimensional set shift task were also observed in the escitalopram-treated group. Our findings following acute administration of a clinically relevant dose of escitalopram show a dissociate role for serotonin in modulating cognition mediated by a potentially differential modulation of fronto-striatal loops.

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#### EW0713

### Microstructural and metabolic disorders in CC of juvenile schizophrenia patients

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**Introduction** The aim of the study was to analyze the microstructural and metabolic features of the corpus callosum in recently onset schizophrenia.

**Objectives** 13 young (17–28 years old) male patients with recently onset schizophrenia (F20, ICD-10) and 15 sex and age matched mentally healthy subjects were examined.

**Methods** 3 T Philips Achieva scanner with 8-channel SENSE coil was used. DTI was conducted with EPI SENSE (TR=9431 ms; TE=70 ms). The values of diffusion coefficient (ADC), fractional anisotropy (FA), radial (RD) and parallel (PD) diffusivity were calculated using workstation Philips EBWS 2.6.3.4. Spectroscopic voxel (2 × 1 × 1 cm) was placed consequently in the corpus callosum genu and splenium. PRESS (TR/TE = 1500/40) was used.

**Results** In patients, increased ADC ( $P=0.02$ ) and RD ( $P=0.008$ ), decreased FA ( $P=0.008$ ) and NAA ( $P=0.03$ ) were found in the corpus callosum genu. No intergroup differences by PD, Cho, Cr, Glx were found in this area. Also, no statistically significant intergroup differences were observed for the DTI and MRS characteristics of the corpus callosum splenium.

**Conclusions** It has been shown that RD increase is associated with demyelination process. So, an increase of RD in the present study could reflect demyelination in CC genu. Cells membranes abnormalities should lead to an increase of Cho which was not found. NAA reduction could be caused by reduction of axonal integrity. The latter process is considered to precede demyelination and not to be accompanied by PD rise. Thus, the present study revealed axonal integrity reduction and low demyelination in the genu of the corpus callosum in the early stages of schizophrenia.

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#### EW0714

### Frontal cortex myo-inositol is associated with sleep and depression in adolescents : A proton magnetic resonance spectroscopy study

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**Aim** This study used proton magnetic resonance spectroscopy (<sup>1</sup>H MRS) to evaluate neurochemistry of the frontal cortex in adolescents with symptoms of sleep and depression.

**Methods** 19 non-medicated adolescent boys (mean age 16.0 y;  $n=9$  clinical cases with depression/sleep symptoms and  $n=10$  healthy controls) underwent <sup>1</sup>H MRS at 3T. MR spectra were acquired from the anterior cingulate cortex (ACC), the dorsolateral prefrontal cortex, and frontal white matter. Concentrations of N-acetyl aspartate, total creatine, choline-containing compounds, total glutamine plus glutamate, and myo-inositol (mI) were compared between the two subgroups and correlated with sleep and clinical measures in the total sample. Sleep was assessed with self-report questionnaires and ambulatory polysomnography recordings.

**Results** Concentrations of mI were lower in both frontal cortical regions among the depressed adolescents as compared to healthy controls. No statistically significant differences in other metabolite concentrations were observed between the subgroups. Frontal cortex mI concentrations correlated negatively with depression severity, subjective daytime sleepiness, insomnia symptoms, and the level of anxiety, and positively with total sleep time and overall psychosocial functioning. The correlations between mI in the ACC and total sleep time as well as daytime sleepiness remained statistically significant when depression severity was controlled in the analyses.

**Conclusion** Lower frontal cortex mI may indicate a disturbed second messenger system. Frontal cortical mI may thus be linked to the pathophysiology of depression and concomitant sleep symptoms among maturing adolescents. Short sleep and daytime sleepiness may be associated with frontal cortex mI independently from depression.

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#### EW0715

### What make suicide depressions different from non-suicide ones: A diffusion tensor imaging study

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**Introduction** Depression is a common psychiatric disorder affecting many people globally, and the worst outcome is suicide. But its neurobiology is hardly understood.

**Objectives** To use DTI to characterize abnormalities of white matter (WM) integrity in major depressive disorder patients with suicide attempts or suicidal ideation.

**Aims** Present study aimed to give a more complete profile for the association of cerebral WM abnormalities with suicidal behavior in major depressive disorder patients by quantifying the suicidal ideation and behavior severity.

**Methods** Thirteen depressive patients with suicide attempts (SA), 14 depressive patients with suicidal ideation but no suicide attempts (SI), 13 depressive patients without suicidal ideation or suicide attempts (NSD) and 40 healthy controls (HC) received MRI scans on a 3 T magnet. Whole brain voxel-based analysis of FA based on DTI was performed among the four groups using a threshold of  $P < 0.05$  with FWE correction. FA values were extracted by Marsbar software to quantify the changes.

**Results** The four groups had significant differences of FA in the in the left splenium of corpus callosum (peak  $Z=5.36$  at  $-14, -36, 22$ ). Quantify comparison revealed that SA had significant decreased FA value than SI, NSD, and HC. There was no significant difference among the other three groups, although there was a trend that SI and NSD had lower FA values than HC in this region.

**Conclusions** Depression and suicide are associated with microstructure abnormalities of the white matter and patients with suicide attempts may have severe cerebral alteration.

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