

P001.1: Effect of prenatal tobacco extract exposure on behaviors of rat offspring

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The effects of prenatal alkaloidic extract of tobacco plant exposure on behavioral parameters in sprague-dawley rat offspring were assessed.

Pregnant rats were exposed by oral away of Alkaloid of tobacco plant on all gestational period. Controls received the physiological water. Before weaning, the offspring were examined using the cliff avoidance response (6 days of age), the negative geotaxis reflex (7 days), and swimming development (10 and 12 days).

The preweaning offspring in the traited group showed significantly lower success rates than controls in cliff avoidance responses and in negative geotaxis reflex. In swimming development, the offspring in the traited group had significantly lower scores than controls for swimming direction.

These results indicate that prenatal exposure to alkaloidic extract of tobacco plant produced a delay of early response development in the offspring of rats exposed to alkaloidic extract of tobacco plant during all pregnancy.

Keys words: Prenatal exposure, developmental behavior, tobacco, alkaloid

P001.2: Effect of melanopsin deletion on the expression of the *Per2* gene in the mouse retina

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Circadian (~24 h) clocks are endogenous time-keeping systems that drive the daily biological rhythms observed in most living organisms. The oscillation is generated by a transcriptional/translational autoregulatory feedback loop that is reset by external time cues such as the light/dark cycle and which in turn controls rhythms in physiology and behaviour through downstream clock-controlled genes. However, the cellular elements and neural regulation of retinal circadian pacemaking remain unclear.

The *Per2* gene is a member of the Period family of genes and is expressed in a circadian pattern in the suprachiasmatic nucleus, the primary circadian pacemaker in the mammalian brain. The specific function of this gene is yet unknown.

Our aim is to investigate the localization and circadian rhythmic pattern of the protein expression of the *per2* clock gene in Wild type (C57BL6) and transgenic melanopsin Knockout mice retina.

To do so, animals were housed at a constant temperature of 21°C under 12h light/12h dark condition (LD 12:12) at least two week before experiments. Just before enucleation, mice were housed under constant darkness (DD) for 2 days, and then eyes were enucleated at 0, 6 and 12 hours of subjective day and 2 hours of subjective night. Tissues were fixed in 4% paraformaldehyde, sucrose infiltrated and cryopreserved. Cryosections were examined by immunohistochemical procedure for PER2 protein.

The results in wild type mice show that the ganglion cell layer and inner nuclear layers contained strong positive immunostaining for PER2 protein. The circadian rhythmic expression of *Per2* protein in the retina was detected. The expression appeared at 0, 6 and 12 of subjective day and was lesser at 2 hours of subjective night under DD. The high expression peak appeared at 12 hours of

subjective day under DD. However, in the knockout mice, Per2 is expressed only at 0 hour of the subjective day in the ganglion cells layer with a weak intensity with respect to the control.

In conclusions: A representative clock genes, PER2 existed in the mouse retina and have a circadian rhythmic expression. This expression appeared however linked to the presence of melanopsin photopigment, since the deletion of this later abolishes the expression of PER2 in all retinal layers.

Key words: Melanopsin, retina, PER2, subjective night, subjective day, subjective night

P001.3: Different pattern of brain activations in ADHD relative to control children during performance of the self-regulation task

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The self-regulation refers to the knowledge and active evaluation of the cognitive processes implicated in the goal-directed behaviour. To date, there has been limited research on the dysfunction of self-regulation in Attention-Deficit Hyperactivity Disorder (ADHD) population. A dysfunction of the ventromedial prefrontal and anterior cingulate cortices, which affects executive function, could partly account for the problems observed in the ADHD. These cerebral regions have been implicated in inhibition, attention, planning and regulation. The objective of the present study was to determine the pattern of brain activations in children placed in a situation of self-regulation, as well as investigate the association between the task performance and cerebral activity. Thirty-one right-handed children (14 ADHD and 17 controls) performed the task consisting of identifying the incoherent (INC) items among 56 pictorial stories presented in a block-design manner during two runs of functional magnetic resonance imaging (fMRI) procedure. The analysis of behavioural data (error rate and reaction time) showed no significant difference between the groups in term of the error rate (ceiling effect) or reaction time (RT). However, there was a significant interaction in terms of RT: the ADHD group was faster during the INC condition relative to the coherent (COH) situations, whereas the reverse occurred for the children in the control group. The fMRI analysis of the INC-COH contrast revealed activations in the dorsolateral prefrontal cortex in the ADHD group and orbitofrontal and anterior cingulate cortex in the controls. There were additional activations in the temporal and parietal cortices in the ADHD children. The results imply that children with ADHD recruit different neural circuitry to arrive at a performance similar to healthy children on the self-regulation task

P001.4: Evaluation of neuro-developmental effects on mice exposed prenatally to Fenugreek seeds extract

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Previous work in our laboratory has shown that neonatal exposure of mice to an aqueous extract of fenugreek seeds results in a growth retardation, stillbirth and motor disorder.

In the present work, the neurobehavioral development of neonatal mice was examined following treatment of dams with a butanolic extract of the same seeds. Pregnant mice were administered by gavage with the butanolic extract of fenugreek seeds throughout the gestational period. After parturition, pups were tested in a developmental test battery including measures of growth, maturational milestones, and neurobehavioral development. Maternal exposure to the extract resulted in significant alterations of the postnatal age at which the developmental milestones of ear and eye opening, testes descent and vaginal opening were observed. There was a reduced weight

gain rate in pups. Also the functional state of the rat pup nervous system at different stages of postnatal development showed some neuro-developmental delays in surface righting reflex, negative geotaxis response, pivoting reflex and swimming ability.

The results of this study suggest that fenugreek seeds maternal exposure may lead to some neuromuscular and behavioral deficits in nursing pups.

Key words: Prenatal exposure; behavioral teratology; fenugreek seeds extract; developmental toxicity, mice

P001.5: Brain asymmetry at stimulation of aggressive environment

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Aim of current research has been an investigation of brain asymmetry at computer simulation of aggressive environment. The Bass-Darky and Eysenck questionnaires, drawing a non existing animal and Wagner's Hand tests were used for determining the level of aggression. After these tests, all subjects were divided into four groups: boys and girls with a high or low level of aggression. Then, the influence of playing aggressive computer games was investigated. The brain visual evoked potentials were recorded in frontal, orbito-frontal, temporal and anterior inferotemporal area before and after playing the game for estimation of brain asymmetry

Dependence of brain asymmetry character both on a level of personal aggression, and on a gender is shown. Inversion from the right to the left hemisphere in frontal cortex, and increase of activity of the right orbito-frontal cortex among aggressive boys is shown at the end of the experiment. Complementally interaction of the left and right hemispheres in the initial registration for aggressive girls, replaced by high activity of the right orbito-frontal, left temporal and anterior inferior temporal areas is revealed. Switch of hemisphere domination from left to the right in frontal cortex at the end of the experiment for non-aggressive boys, and also domination of the right frontal area among non-aggressive girls is observed. The revealed results can be used for prevention of teenagers' deviant behaviour.

P001.6: Electrophysiological responses of Chemoreceptor neurons in *Calliphora vicina* (Diptera: Calliphoridae) to morphine sulfate and its implications in forensic entomology

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The major task of a forensic entomologist is to determine an accurate post-mortem interval (PMI) by analyzing the development or succession of necrophagous insects and other arthropods on the carcass. Blow flies (Diptera: Calliphoridae) are the first arrival at a death scene and are attracted to carcasses through volatile compounds emitted during different stages of decomposition. It is therefore probable that flies can easily distinguish between chemical signatures of early and late decay stages. Blowflies respond to sugars, salts and water through the activation of specific chemoreceptor within the antennal, labellar and tarsal chemosensilla. These insects also detect deterrent stimuli through a specific "deterrent" chemoreceptor within their sensilla called the "fifth" cell. Several investigations of chemosensory sensilla in various insect groups have been performed to date, but relatively little information involving forensically important fly species. Due to this deficiency, the purpose of this study was to investigate the electrophysiological responses of receptor neurons on the antennae, labium and tarsus of a forensically important blowfly (*Calliphora vicina*) to different doses of morphine in decomposing tissues as well as odors emitted from the underneath soil. Electrophysiological recordings indicate that the best responding cell to morphine

sulfate is the 5th cell "deterrent cell" in all stimulating sites but with different degrees of sensitivity. These results strongly suggest that morphine sulfate with its different doses has a significant repellent effect on the attractiveness of *Calliphora vicina*. These conclusions should be considered when estimating PMI otherwise under estimation will result.

Key words: *Calliphora vicina*, Chemoreceptor neurons, PMI

P001.7: Simple reaction time: A comparison between athlete beginner, intermediate and athletes experience practitioners of Muay Thai

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The simple reaction time observed in attack and defence moves against opponents is an important ability for Muay Thai fighters. The Muay Thai event matches are known by their dynamism in blows where the athletes use their fists, elbows, knees, shins and feet to attack or defend themselves against their opponents. Such diversification of blows linked to the timing of the fight which is divided in five rounds of three minutes with one minute for rest characterize Muay Thai as a high intensity event. In high contact performance sports, particularly Muay Thai, details can make all the difference between winning and losing a fight. Considering that it is believed that the simple reaction time can be an important variable to be investigated in the event. The objective of this study was to verify the difference in simple decision making among junior fighters (white belt), intermediate (light blue belt) and seniors (black belt) in the Muay Thai event. 26 male athletes were analysed. Their average age was 26.23 years old \pm 4.19 years. They were divided in three groups: white belt (n = 10), light blue belt (n = 8) and black belt (n = 8). The Mel Professional V2 01 Psychology Software Tools was used for the simple reaction time record. Results were compared by Kruskal – Walls rank sum test ($p \leq 0.05$). The analysis of simple reaction test between the white belt group ($t = 198.31 \pm 61.05$), the clear blue belt group ($t = 195.38 \pm 41.15$) and the black belt group ($t = 201.67 \pm 51.44$) didn't show significant differences ($p = 0.11$). Results show that practice time of Muay Thai didn't interfere on simple reaction time of practitioner.

Key words: Simple reaction time, senior fighters, Muay Thai

P001.8: Differences in the behavioral effects of oxytocin and carbetocin after their peripheral application to Wistar rats

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Oxytocin (OXY) is a neurohypophyseal nonapeptide, which has primarily the peripheral effects during parturition and lactation. In the brain OXY acts as a neurotransmitter or neuromodulator and plays a prominent role in several central functions, like behavior, memory, learning, grooming etc. A number of OXY analogs have been designed as therapeutic substitutes with changed uterotonic activities. Carbetocin (CBT; deamino-1-monocarba-[2-O-methyltyrosine]-oxytocin) was prepared as a long-acting OXY analog to control postpartum bleeding. Peripheral administration of OXY is known to produce behavioral effects; however, there are very limited experimental data on the central effects of CBT. The aim of this study was to compare the length of behavioral effects of OXY and CBT. Male Wistar rats were used. Spontaneous behavior was tested in circular open-field

arena with 150 cm diameter. Behavioral parameters were recorded by AnyMaze software (Stoelting Co, USA). OXY and CBT (Polypeptides GmbH, Czech Republic) were given i.p. 60 min before behavioral test and repeatedly tested in several following days. While OXY produced reduction of exploratory activity and increased grooming time, CBT had slight increasing effect on the exploratory activity and revealed no effect on grooming. The exploratory effect of CBT survives for several days while the effect of OXY was not long-lasting. Our results support the possibility of using CBT in various psychic disorders like autism etc.

Keywords: oxytocin, carbetocin, behavior, grooming, exploration

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P001.9: Behavioural effects of striatal lesions in the rat

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Following the administration of unilateral or bilateral electrolytic lesions which included the dorsolateral and dorsomedian regions of the striatum, adult rats were tested 4 wks post surgery to evaluate exploratory activity in the open field, motor behaviour in the rotarod "grip" test and learning performance in an 8-arm radial maze.

Rearing activity was generally lower in lesioned rats when compared to controls and the effect was more pronounced in animals with bilateral lesions. Striatal rats also exhibited deficiencies in motor coordination and balance on the rotarod and the effect was again more prominent in subjects with bilateral lesions. On the other hand, learning performance on the radial maze task was similar for both groups with striatal lesions to that of controls. These results suggest that unilateral or bilateral lesions of the dorsolateral and dorsomedian striatal regions disrupt exploratory and locomotor activity without influencing learning ability.