rent study. Transient expression of glutamate receptors in the developing brain may provide an explanation for patterns of selective vulnerability. Modification of excitatory neurotransmission in the fetus and newborn brain may reduce brain injury (e.g., cerebral palsy).

NEUROCHEMICAL AND BEHAVIORAL EVIDENCE FOR A CENTRAL INDIRECT CATECHOLAMINERGIC AGONIST ACTIVITY OF GK 13. Kamenka,* J. M., J. J. Bonnet, M. Slimani, D. Boucher and J. Costentin. U.A. 1170 C.N.R.S., Université de Rouen, 76800 Saint Etienne du Rouvray, *Ecole Nationale Superieure de Chimie, L.P. 8402 C.N.R.S., 34075 Montpellier, France.

GK 13 is a benzothiophene derivative of phencyclidine. It does not possess the phenylethylamine structure common to various substrates of the neuronal catecholamine uptake complexes. However it seems to behave as an indirect catecholamine agonist. The present studies aim to verify this assertion and to prove its mechanism(s) of action. On a synaptosomal fraction prepared from rat striatum, using a double labelling test which assesses simultaneously the effect of a drug on the ^{3}H-dopamine (DA) influx and the 14C-DA efflux, we observed that GK 13, at a 3.10^{-7} M concentration inhibits completely the ^{3}H-DA uptake, with an IC50 of about 3.10^{-8} M. A ^{14}C-DA release occurs from 10^{-9} M, in a concentration dependent manner. It reaches about 50% of the 14C-radioactivity stored in synaptosomes for a 10^{-6} M concentration. Such a neurochemical profile has some similarities with that of amphetamines. These substrates of the DA uptake complex have a low affinity for the site modulating the DA uptake to which bind pure DA uptake inhibitors such as nomifensine, mazindol, GBR 12783. This point distinguishes GK 13 from amphetamines because it is a potent competitor for the specific binding of 3H-GBR 12783 to this modulatory site (IC50 $\simeq 10^{-8}$ M). In addition, GK 13 is less effective to inhibit 3H-Norepinephrine uptake (synaptosomes from hypothalamus, IC50=0.22±0.02 μM) than ^{3}H-DA uptake. Administered systematically to mice GK 13, from a 4 mg/kg dose, increases in a dose dependent manner their locomotor activity. This effect occurs rapidly (<10 min) and is long lasting (>4 hr). Similarly to dexamphetamine it partially antagonizes reserpine-induced hypothermia but it poorly reverses reserpine-induced akinesia.

THE CONFORMATIONAL ADAPTATION OF THE PHENCYCLIDINE MOLECULAR PATTERN TO THE LIPOPHILICITY OF ITS SURROUNDINGS. Kamenka, J.-M. and R. Chicheportiche. CNRS LP 8402-INSERM U 249, Ecole Nationale Supérieure de Chimie, 8, rue de l'Ecole Normale 34075 Montpellier-Cédex-France.

The phencyclidine (PCP) molecule is known to possess an uncommon profile making its pharmacological classification difficult. This particular behavior is probably a consequence of the action of the PCP molecule on multiple biological systems. In a search for biochemical specificity we have tested closely related PCP compounds for their ability to interact with ^{3}H-PCP, ^{3}H-QNB, ^{3}H-DHM sites or ^{3}H-dopamine transport, and found some structures to possess interesting specificity. Surprisingly they do not differ very much from phencyclidine. The most striking case is TCP differing only by the aromatic group (a 2-thienyl instead of a phenyl) from the PCP. The difference in terms of lipophilicity or size does not appear important enough to totally explain the increase in specificity. In order to compare these two structures we have made measurements of their conformational equilibria in solution in different classes of anhydrous organic solvents by means of ^{13}C-NMR using the so-called Eliel's method. We found the conformational free-energy of TCP and PCP to be linearly related to the maximum solubility of water in the solvents. The most interesting case was that of oxygenated polar solvents where the conformational equilibria were shifted toward the biologically inactive conformation when the maximum water solubility was reduced. Conversely the biologically active conformation was generated when the maximum water solubility was increased. Such a behavior is interestingly different for PCP and TCP as shown by the different slopes of the linear relationships. It can be concluded: (1) The general pattern of PCP-like molecules seem to behave as "chameleon-like" structures adapting their conformational equilibrium to the lipophilicity of the surroundings, (2) The conformational adaptation seems to be dependent of the geminal aromatic and amino groups, (3) For TCP and PCP the proportion of the biologically active conformation is different in a given medium especially in lipophilic ones. The hypothetical involvement of such a physical comportment in binding and localization characteristics of PCP and TCP will be discussed.

PCP BINDING AND ITS EFFECT ON IMMUNOCYTES *IN VITRO*. Khansari, N. and H. D. Whitten. Department of Veterinary Science, North Dakota State University, Fargo, ND, and Southern State University, Baton Rouge, LA.

Antigenic similarity is being found increasingly among cells of the central nervous system and immune system; e.g., morphine, metenkephalin, *beta*-endorphin, substance P. We have found that radiolabeled PCP can bind to human peripheral blood immunocyte. Binding PCP to various immunocyte subpopulations varied significantly. However, the nature of binding (reversibility and saturability) and the extent of binding were similar to that observed with a *sigma*-receptor positive mouse neuroblastoma-chinese hamster brain hybrid cell line (NCB-20). We found that PCP has suppressive effect on several immunocyte functions (*in vitro*) such as: DNA synthesis, 2-deoxyglucose uptake (monocytes activation), interleukin-1 production and immunoglobulin synthesis. These studies indicate that both humoral and cell-mediated immunity are significantly affected by PCP. More importantly, these results suggest formulation of an hypothesis in which a peripheral anti-receptor immune response (autoimmunity) might enhance that precipitation of a psychosis in part dependent on PCP-*sigma* opioid receptor interaction in the CNS. (Supported in part by Harry Frank Guggenheim Foundation.)