A21

BIOCHEMICAL VARIABLES IN SPECIES AND GENOTYPE-DEPENDENT PREFERENCE FOR ETHANOL. F. S. Messiha, S. Baskett, and J. Webb, Texas Tech University Health Sciences Center, School of Medicine, Lubbock, Texas 79430.

The hamster, a species known for its consumption of a relatively large quantity of ethanol (ET), possesses liver alcohol dehydrogenase (L-ADH) 50.5 ± 1.8 nMol/min/mg protein compared to 16.7 ± 0.8 units of the rat ($p<0.001$). The hamster hepatic mitochondrial aldehyde dehydrogenase (L-ALDH) activity was moderately higher than that of the rat ($p<0.1$). Endogenous L-ADH of a mouse strain with preference to ET drinking, i.e. C57BL, was 21.5 ±2.2 units compared to 13.6 ± 1.5 units ($p<0.01$) and 16.7 ± 0.9 units ($p<0.1$) for a mouse strain without preference for ET, i.e. DBA/2J, and to Sprague Dawley (SD) mice, respectively. L-ALDH of C57BL, 8.7 ± 0.6 units, was greater than 4.4 ± 2.4 units ($p<0.005$) of the DBA and 3.3 ± 0.3 units ($p<0.001$) of the SD. Daily administration of ET, 2 g/kg, induced L-ADH ($p<0.02$) in C57BL after 7 days with a rebound occurring after 14 days compared to inhibition of L-ADH in SD mice. The results indicate the contribution of the liver to behavioral responses thought to be mediated by the CNS.

A22

THE EFFECT OF ADRENERGIC AND DOPAMINERGIC AGENTS ON VOLUNTARY INTAKE OF ETHANOL BY THE HAMSTER. Richard L. Weddige, Abraham Flemenbaum and Rodolfo M. Arredondo, Department of Psychiatry, Texas Tech University Health Sciences Center, School of Medicine, Lubbock, Texas 79430.

The catecholamine hypothesis of affective disorders and the implication of the catecholamine in the physiological effects of ethanol provided the rational for this study. The subjects were male hamsters with preference for ethanol (ET) over water as the drinking fluid. All drugs were dissolved in saline and injected i.p. The effect of some adrenergic, dopaminergic and cholinergic agonists and antagonists on voluntary drinking of ET was studied. Phenylephrine (1.5 mg/kg), phenoxybenzamine (5 mg/kg), isoproterenol (0.5 mg/kg), propranolol (2.5 mg/kg), clonidine (0.4 mg/kg), apomorphine (1.5 mg/kg), haloperidol (1 mg/kg), clozapine (7.5 mg/kg). Clozapine was the only compound which significantly decreased ET drinking (46%) from mean predrug-treatment value. The results suggest that properties other than anticholinergic or antidopaminergic actions of clozapine may have contributed to the effect studied.

A23

ACUTE AND CHRONIC EFFECTS OF MATERNAL ETHANOL ADMINISTRATION ON THE OVINE MATERNAL-FETAL UNIT. J.C. Rose, J.W. Strandhoy and P.J. Meis. Departments of Physiology & Pharmacology and Obstetrics/Gynecology, Bowman Gray School of Medicine, Winston-Salem, NC 27103

The purpose of this study was to examine in the pregnant ewe and its fetus some of the physiological consequences of acute and chronic ethanol exposure. Ethanol was infused i.v. (2g/kg per day over 2 hr) to pregnant ewes from day 100 of pregnancy to term. Control animals received isocaloric infusions of 5% dextrose. Animals were pair-fed and allowed water ad lib. Maternal (n=5) systolic, diastolic, and mean blood pressures (BP) and heart rate (HR) rose significantly by 1 hr after starting ethanol, suggesting an increase in catecholamines. Fetal (n=1) BP and HR did not change during ethanol infusion. Peak blood ethanol concentration was significantly higher in the ewe (240 ± 6 mg/dl, n=7) than in the fetus (190 ± 9 mg/dl, n=6) at the end of the 2 hr infusion. Maternal rate of elimination during 3 hr after the ethanol infusion was terminated was 40 mg/dl per hr while fetal elimination was 10 mg/dl per hr. Disappearance during this time period followed zero order kinetics. Body weights of fetuses from .82-1.0 gestation were significantly less in ethanol treated animals than in age-matched control animals. Fetal crown-rump lengths were also less in the ethanol treated animals. Thus, chronic exposure to ethanol during the latter part of gestation impaired fetal growth in these animals.

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A24

THE RELATIONSHIP BETWEEN SOCIAL DOMINANCE AND VOLUNTARY ALCOHOL CONSUMPTION IN MALE AND FEMALE SINCLAIR(S-1) MINIATURE SWINE. J.D. Dexter, M.E. Tumbleson, J. Tinsley, C.C. Middleton. Schools of Medicine and Veterinary Medicine and Sinclair Research Farm, Univ. of MO, Columbia, MO 65212.

The relationship between social dominance and alcohol consumption was studied in 3 groups of Sinclair(S-1) miniature swine, 2 groups of boars and 1 group of gilts. Group I was composed of 6 boars, Group II consisted of 6 gilts and Group III was made up of 5 boars. All animals were 6 months of age at the time of the start of the studies. Each group was pen-housed in a 4x4 meter pen with concrete floors and chain link fence sides. Each pen was equipped with independent feeding stalls that enabled individual monitoring of feed and alcohol consumption. Water was available ad libitum 24 hours per day. The animals in Group I were allowed access to alcohol for 1 hour 3 times per day, and animals in Groups II and III were allowed access to alcohol 1 hour 2 times daily. The animals were observed for quantity of consumption during each period of access to alcohol. In every group there was a marked increase in frequency of high level ethanol consumption in those animals who were in the lower portion of the dominance order. The frequency of signs of severe intoxication was much higher in those animals in the lower portion of the dominance hierarchy. This relationship between increasing ethanol consumption and decreasing position in social dominance order approaches a linear relationship.