

Effect of chronic ethanol consumption on postnatal development of renal (Na + K)⁺ATPase in the rat

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Renal (Na + K)⁺ATPase was studied to ascertain whether it follows the pattern of adaptation of membrane-bound enzymes that are inhibited by acute ethanol exposure and develop greater activity after chronic ethanol treatment. A colony of rats was given 20 per cent (v/v) ethanol as sole drinking solution throughout gestation, lactation and following weaning. (Na + K)⁺ATPase and ouabain-insensitive Ca²⁺ATPase activities were determined; regional distribution of these enzymes was assessed in renal cortex and outer medulla. Control rats drank tap water. (Na + K)⁺ATPase in whole homogenate of kidney increased with age in controls and ethanol-fed rats, but the latter showed higher values at every age studied. Between 15 and 60 days of age, the control group showed 2-fold increases in cortex and 5-fold in outer medulla, whereas ethanol-fed rats reached a 3-fold increase in the enzyme activity in both renal regions. Ca²⁺ATPase showed the same time course in developing kidney of both groups. C