Induction and inhibition of hepatic microsomal and mitochondrial enzymes by ethanol.

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Abstract: Sprague-Dawley rats were given for 15 to 24 days diets which were nutritionally adequate, deficient in protein and choline or low in fat. Pair-fed littermates were given similar diets in which ethanol supplying 36% of energy replaced carbohydrate. The addition of ethanol led to liver steatosis, increased microsomal protein...
proliferation of smooth endoplasmic reticulum in the liver. There was also increased activity of the microsomal drug metabolising enzymes in the liver such as aniline, pentobarbitol and benzpyrene hydroxylases; cytochrome P₄₅₀ was increased. An adequate diet with ethanol supplying 42% of the energy which was given to three healthy persons for 12 days produced similar reactions. When ethanol was added to liver microsomes of male rats the activity of the drug metabolising enzymes was inhibited and this may explain why sober alcoholics have a resistance to barbiturates. Acute ethanol intoxication in rats resulted in increased activity of liver D-amino laevulinic acid synthetase, which could be blocked by treatment with actinomycin or puromycin.

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