

## PROTEIN INTAKE AND NICOTINAMIDE NUCLEOTIDE LEVELS IN CAT LIVER

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The cat differs from other mammals in many important nutritional and biochemical features one of the most important being the high dietary protein requirement. Another unusual aspect is the inability to synthesise nicotinic acid from tryptophan which is apparently due to the extremely high activity of liver picolinate carboxylase (EC 4.1.1.45) (Ikeda et al. 1965). It has recently been shown that the activity of picolinate carboxylase in rat liver is increased by a high protein intake (Johnson and Evans 1984) so we examined the possibility of the existence of a similar interaction in the cat.

Two groups of six cats were fed isoenergetic diets containing 23% or 46% protein as isolated soy-protein. Three animals within each group received one of two levels of nicotinamide (2 or 10 mg/d) which was administered as a sterile subcutaneous injection each day. The animals were killed by overdose of anaesthetic and liver samples taken for analysis and the results are presented in the table.

The effect of protein intake and nicotinamide level on picolinate carboxylase activity and pyridine nucleotide concentration in cat liver.

Protein %	23	23	46	46	
Nicotinamide mg/d	2	10	2	10	
					SEM
Picolinate carboxylase U/g	0.72	0.74	0.90	0.69	0.08
NAD $\mu$ mol/g	0.66	0.63	0.64	0.63	0.03
NADH $\mu$ mol/g	0.14	0.14	0.19	0.19	0.02
NAD/NADH free cytosol	432	186	301	355	93
NAD/NADH free particulate	4.9	4.8	8.1	9.3	1.7

The growth rate of the cats was related to protein intake being approximately 11 g/d and 21 g/d on the 23% and 46% protein diets respectively. There were no significant treatment effects on the activity of picolinate carboxylase or on the concentrations of pyridine nucleotides.

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