

EFFECT OF FLAVONE ON RAT LIVER MITOCHONDRIAL METABOLISM

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Flavonoids are a group of polyphenolic compounds that have multiple activities including anti-inflammatory, anticarcinogenic and antioxidant properties. Flavone (2-phenyl-4H-1-benzopyran-4one) has been found in some cereal grains and in dill. This compound has several biochemical activities, including: i) increase in the activity of drug-metabolizing enzymes in rat liver; ii) induction of activation of caspases and iii) inhibition of oxidative properties of intact plant mitochondria. However, its effect on the metabolism of rat liver mitochondria is not very well known. We now evaluate the effect of flavone (0.025 – 0.2 mM) on the metabolism of rat liver mitochondria. Polarographic experiments using flavone (0.2 mM) and mitochondria oxidizing glutamate or succinate show respectively: i) inhibition of oxygen consumption during state III with both substrates (50% and 25%) with no effect on state IV; ii) decrease of the respiratory control coefficient (60% and 40%); and iii) decrease of the ADP/O ratio (15% and 20%). In disrupted mitochondria, flavone (0.2 mM) also inhibited succinate-oxidase and NADH-oxidase activities by 30% and 90%, respectively. These results indicate that flavone inhibits enzyme activities, interfering with electron transport in the respiratory chain of rat liver mitochondria.

Key words: Flavone, mitochondria and respiratory chain.

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