

## **Nondigestible Oligosaccharides Inhibit Rat Liver Mitochondrial Respiration**

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Nondigestible prebiotic foods are known as dietary components that may cause physiological effects on the consumer, leading to justifiable claims of health benefits. Although there are a large body of literature describing the prebiotic effects of oligosaccharides, little is known about its cellular mechanisms of action. Here we describe the investigation of the potential activity of mananoligosaccharides (MOS), fructooligosaccharides (FOS), inulin (IN) and kefir growth factor (KGF) on the respiratory activity of isolated mitochondria. Samples from rat liver (1200?g protein/mL) was preincubated with the carbohydrates in 20mM phosphate buffer pH 7.3 containing 70 mM sucrose, 1mM EDTA, 5mM MgCl<sub>2</sub>. Oxygen consumption was determined by chronoamperometry at 50 rpm stirring suspensions in 2mL final volume using a home-made Clark-type electrode Pt-Ag/AgCl connected to a potentiostat and -600mV of applied potential. The system was previously calibrated with N<sub>2</sub>-saturated solution and baker yeast suspensions. The current signals after sequential additions of buffer, mitochondrial samples, 100mM succinate, 100μL of oligosaccharides and 100mM malonic acid was obtained during 90min, after proper filtering, signal amplification and conversion to oxygen concentration and flux. The oxygen device prompt a time constant of 10min<sup>-1</sup> with a response time of 68s. The results for organelle suspensions presented a total inhibition for mitochondrial respiration with 0.2% KGF solution, and partial mean inhibitions of 89.9%, 32.9% and 24.3% for MOS (0.04%), IN (16%) and FOS (8%), respectively.

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