IRON SPECIATION FROM FERRIC PYROPHOSPHATE IN THE CECAL CONTENTS FROM RATS FED FRUCTOOLIGOSACCHARIDES

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Fructooligosaccharides (FOS) have been shown to enhance mineral bioavailability by inducing physicochemical changes in the intestinal lumen. Here, the effect of feeding FOS on the iron speciation in the cecal content of anemic rats submitted to hemoglobin repletion assay was evaluated. Male Wistar rats were recovered from the anemia with diets containing 35 mg Fe/kg and 7.5% FOS for 14 days. Sequential extraction for the iron speciation was based on the use of extractants with increasing ionic strengths. Validation of the analytical procedure was performed by testing the linearity, precision and accuracy. A good linearity of the calibration curves with different extractants was obtained ($r^2 > 0.999$). However, the carbonate and organic fractions were less sensitive and had the greatest within-run imprecision (11 and 15% respectively). The carbonate, oxide and organic fractions had a higher inter-assay imprecision (11, 34 and 15% respectively). The recovery of ferric pyrophosphate added to a pool of cecal content was 1% in the exchangeable, 5% in the carbonate, 28% in the oxide and organic fractions and 38% in the residual fraction. FOS fermentation increased SCFA production and reduced luminal pH in the cecum, which may have contributed to the increased iron solubility, as demonstrated by the mobilization of mineral for the exchangeable fraction. The sequential extraction method contributes to the preliminary assessment of the interaction among dietary components in the gut. Further evaluation of accuracy with different iron sources will allow a better understanding of the role of FOS in the intestinal iron absorption.

Financial Support: FAPESP, CNPq.