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Dietary fiber suppresses elevations of uric acid and allantoin in serum and urine induced by dietary RNA and increases its excretion to feces in rats.

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This study was performed to examine the effects of several kinds of dietary fibers (DF) with different physical properties on dietary RNA metabolism. Male Wistar strain rats, 4 wk old, were fed diets with or without a 3% yeast RNA and a 5% DF (cellulose, chitin, chitosan, inulin, and xanthan gum) for 20 d (Experiment 1) or 5 d (Experiment 2). Feeding DF tested lowered the serum uric acid and allantoin concentrations and the urinary excretions of their compounds and increased the amount of RNA excreted into the feces compared with fiber-free. The water-holding capacity and nucleotide adsorption of chitin and chitosan in acidic solutions were higher than those of cellulose. The digestion rate of RNA by RNase A in vitro was found to be lower in the DF tested than in fiber-free. The decrease was remarkable in chitosan and xanthan gum. The uptakes of ¹⁴C-labeled adenosine and adenosine 5'-monophosphate (5'-AMP) in the rat jejunum were markedly decreased in regard to chitosan and xanthan gum in comparison with the fiber-free. These phenomena suggest that DF with high viscosity is more strongly associated with the suppression of RNA digestion by RNase A and the depression of the uptake of purine compounds to jejunum. The present results reveal that the elevation of serum uric acid concentration induced by dietary RNA can be suppressed by DF in rats.