

ABSTRACT

Provided herein are substances and methods for improving the health and homeostasis of the intestinal tract, and the nutrition and development of a subject. The substances are odd-carbon fatty acids. Specifically, provided herein are uses of odd-carbon fatty acids in the preparation of formulations or medicaments for, among other things, increasing the protein expression abundance of a tight junction-associated protein in a subject, reducing the content of an adrenocorticotrophic hormone-releasing hormone in tissue of the intestinal tract of a subject, improving or enhancing the mechanical barrier of the intestinal tract of a subject, maintaining immune homeostasis in the intestinal tract of a subject, promoting the development of the intestinal tract of a subject and maintaining the energy homeostasis of cells of the intestinal tract of a subject, and improving energy metabolism in the intestinal tract, promoting the development and metabolism of muscle tissue of a subject, promoting the development and metabolism of adipose tissue of a subject, decreasing an allergic reaction in the body and intestinal tract of a subject, reducing the insulin resistance in a subject during pregnancy, controlling blood sugar in a subject during pregnancy, preventing gestational diabetes, preventing or improving gestational intrahepatic cholestasis in a subject, and preventing or treating a disease in a subject resulting from bacteria of the *Helicobacter pylori* genus.