OPEN ACCESS Freely available online

Journal Applied Microbiology: Open Access

Opinion Article

Yeast Protein: Biochemical Properties and *In Vivo* Gastrointestinal Digestion

Guangji Leong*

Department of Applied Microbiology, Fudan University, Shanghai, China

DESCRIPTION

Rats' gastrointestinal tracts were used to digest yeast protein, and the effects of this digestion on blood biochemical markers were studied over time. Rats either absorbed the yeast protein or it reached their colon after trypsin in their small intestines converted it into amino acids or the dipeptides. Pepsin degraded the yeast protein into peptides in the stomach. Peptide levels peaked at 4 hours, 2 hours, and 8 hours, respectively, in the digestive juices of the stomach, small intestine, and large intestine. There's no intact proteins was detected in the intestinal digesta, and within 4 hours, intact yeast protein was discovered in the stomach tract. Intestinal digesta of yeast protein exhibited significantly fewer distinct and clear stripes when compared to stomach nutrients. While using yeast protein did not significantly alter the amount of globulin, albumin, aspartate aminotransferase, along with alanine aminotransferase in serum, it did increase the amount of Immunoglobulin high-density lipoprotein, and uric acid and decrease the amount of triglycerides, total cholesterol, and low-density lipoprotein. Yeast protein as an effective and sustainable alternate protein source by demonstrating the kinetics of yeast protein digestion in the intestinal tract of rats and its positive effects on bloodstream biochemical parameters of rats.

The sensory quality of meat products is greatly reduced when off-flavor chemicals are present. This study used gas chromatography-mass spectrometry to examine the actions of the Yeast Extract (YE) in absorbing contaminants using two amine off-flavor chemicals, Trimethylamine (TMA) or Dimethylamine (DMA), as examples. In order to clarify the process of yeast extract adsorption of off-flavors, the impact of TMA and DMA on YE structure were further investigated using molecular docking and multi-spectroscopic approaches. The outcomes showed that YE had a considerable affinity for DMA but also shown strong adsorption abilities towards TMA. The YE structure was unfurled by TMA and DMA, which also caused a rise in the zeta potential and total sulfhydryl concentration as well as a fall in the YE particle size and surface hydrophobic properties.

The fermentation industry's waste byproduct, yeast protein concentrate, has high nutritional value, is environmentally sustainable, and has useful qualities. It is a possible substitute for raw protein. On the other hand, little is known about its bioavailability and digestion processes. Applying synthetic gastrointestinal settings, we investigated in vitro digestive activity of milk protein concentrate and yeast protein concentrate in this project. When pepsin was digested for 120 minutes, the digestibility of yeast protein concentrate was found to be lower than that of the concentrate of whey protein (31.25% vs. 86.23% and 75.12% vs. 95.2%). In terms of micro structure, secondary structures, and amino acid makeup, yeast protein concentrate differs from whey protein concentrate, perhaps influencing how it is absorbed.

Instead of utilizing the widely used techniques of enzymes and acid hydrolysis, this research creates a novel procedure based on yeast hydrolysis for the manufacture of bioethanol from freshwater and marine algae. Specifically for this method, yeast were isolated, modified, and the efficiency of the hydrolysis was assessed. After then, this technique was assessed in a comprehensive ethanol production process that included ozone pretreatment, yeast fermentation and hydrolysis, and various nutrient supplementation schedules. For water (*Spirogyra hyalina*) and aquatic (*Kappaphycus alvarezii*) algae species, the method efficacy was assessed. For both water and aquatic algae species, the yeast-based hydrolysis performed more effectively than acid and enzyme hydrolysis, with the freshwater algae showing notable outcomes. *Rhodotorula mucilaginosa* DSM 70825 yielded the most encouraging findings out of all the yeast strains examined, indicating the greatest potential for extracting nutrients and organic substrates. This strain achieved varying decrease rates of fifty percent to eighty sCOD, 45%-60% tVFAs, 21%-45% TN, and 33%-52%PO43, depending on the medium.

CONCLUSION

These yeasts' great efficiency in removing nutrients and organics may be related to their capacity to assimilate xylose, which serves as the liquid digestates primary carbon source. Both yeast strains demonstrated good survivability and proliferation capability in

Correspondence to: Guangji Leong, Department of Applied Microbiology, Fudan University, Shanghai, China, E-mail: gualeong@gl.edu.cn

Received: 07-May-2024, Manuscript No. AMOA-24-32427; **Editor assigned:** 10-May-2024, PreQC No. AMOA-24-32427 (PQ); **Reviewed:** 28-May-2024, QC No. AMOA-24-32427; **Revised:** 05-Jun-2024, Manuscript No. AMOA-24-32427 (R); **Published:** 14-Jun-2024, DOI: 10.35248/2471-9315.24.10.320

Citation: Leong G (2024) Yeast Protein: Biochemical Properties and *In Vivo* Gastrointestinal Digestion. Appli Microbiol Open Access. 10:320.

culture media including liquid digestate. *R. mucilaginosa* and *Candida sp.* demonstrated viability in the liquid digestate medium at 51.5% and 45.0%, respectively. These strains appear to be an excellent place to start.