



DEVELOPMENT OF PROBIOTICS BROWN RICE BEVERAGE



Nanthiya Nuanprasert, Nichakorn Sriubonmart and Ulisa Pachekrapapol

Division of Food Science and Nutrition, Faculty of Agricultural Product Innovation and Technology
Srinakharinwirot University

ABSTRACT

Brown rice is whole grain rice with outermost layer removed. In this study, we used *Lactobacillus plantarum* TISTR 2075 as probiotics. Probiotic culture (2%) was added to brown rice beverage (BRB). Before spray drying, 10% (w/v) maltodextrin (MD) was added, and 10% (w/v) rice protein (RP) or milk protein (MP) were used as protective agents. Viable cell counts, pH, viscosity and sensory test were analyzed. Viable cell counts of BRB after addition of probiotics and after spray drying were more than 10^6 CFU/ml, which is within the limit of probiotic products. After addition of probiotics, the pH values significantly decreased and viscosity significantly increased. The sensory evaluation revealed that probiotic brown rice beverage received slightly lower score than non-probiotic brown rice beverage.

INTRODUCTION



Probiotic products available commercially are mostly dairy products, so people who are diagnosed with cow milk protein allergy may avoid the consumption of these probiotic dairy products (Piyathorn, 2002). For this reason, the research has focused on brown rice which is rich of antioxidants, has cholesterol lowering capacity with low glycemic index (GI) (Marimuthu et al., 2014). Probiotics are live bacteria that good for health and probiotic foods must have a minimum microorganism count of 10^6 CFU/ml on the storage period (FDA, 2011). The aim of the study was to develop probiotic brown rice beverages for people who are diagnosed cased of cow milk protein allergy.

RESULTS & DISCUSSION



pH values

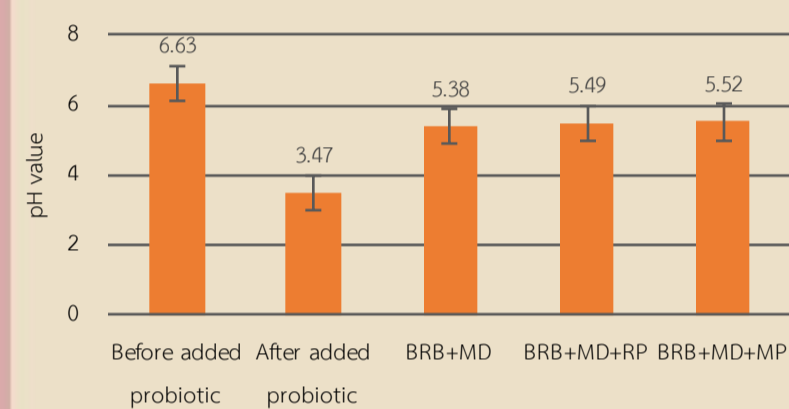


Fig 1. pH values of brown rice beverage before added probiotics, after added probiotics and before spray drying.

Viscosity

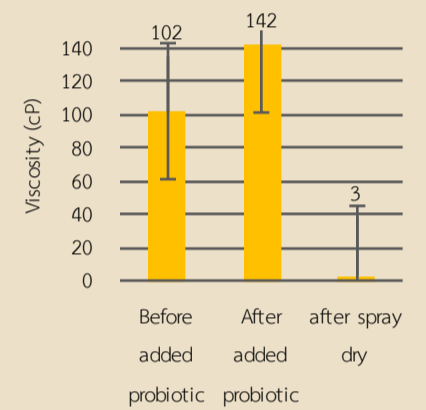


Fig 2. Viscosity of brown rice beverage before added probiotics, after added probiotics and brown rice beverage powder with milk protein.

Viable cell count

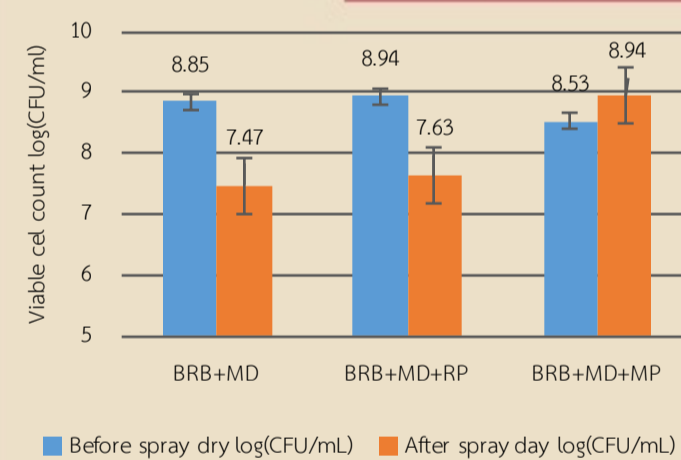


Fig 3. Viable cell counts of brown rice beverage after added probiotics and brown rice beverage powder.

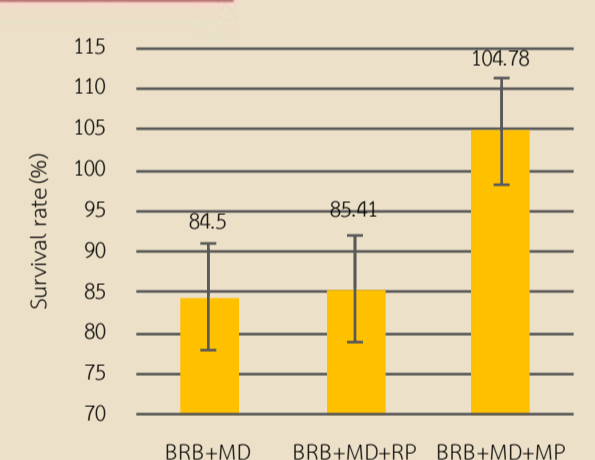


Fig 4. Survival rate (%) of brown rice beverage powder.

Sensory

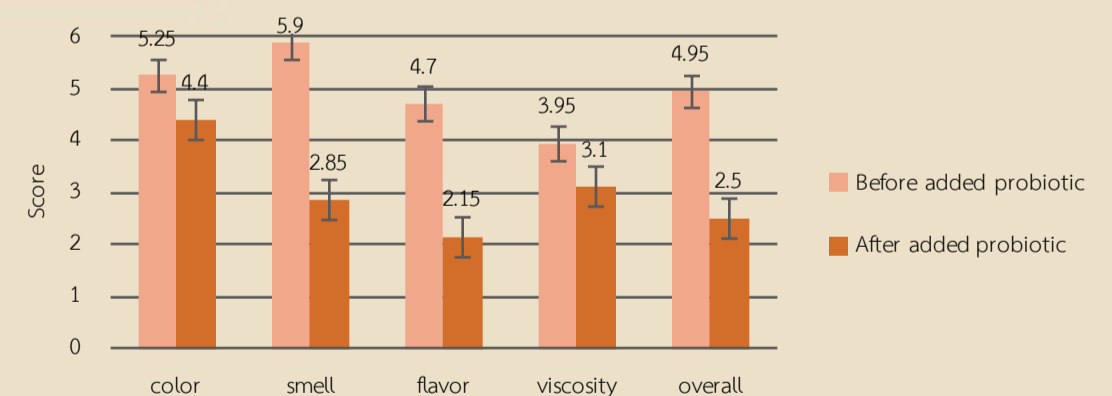
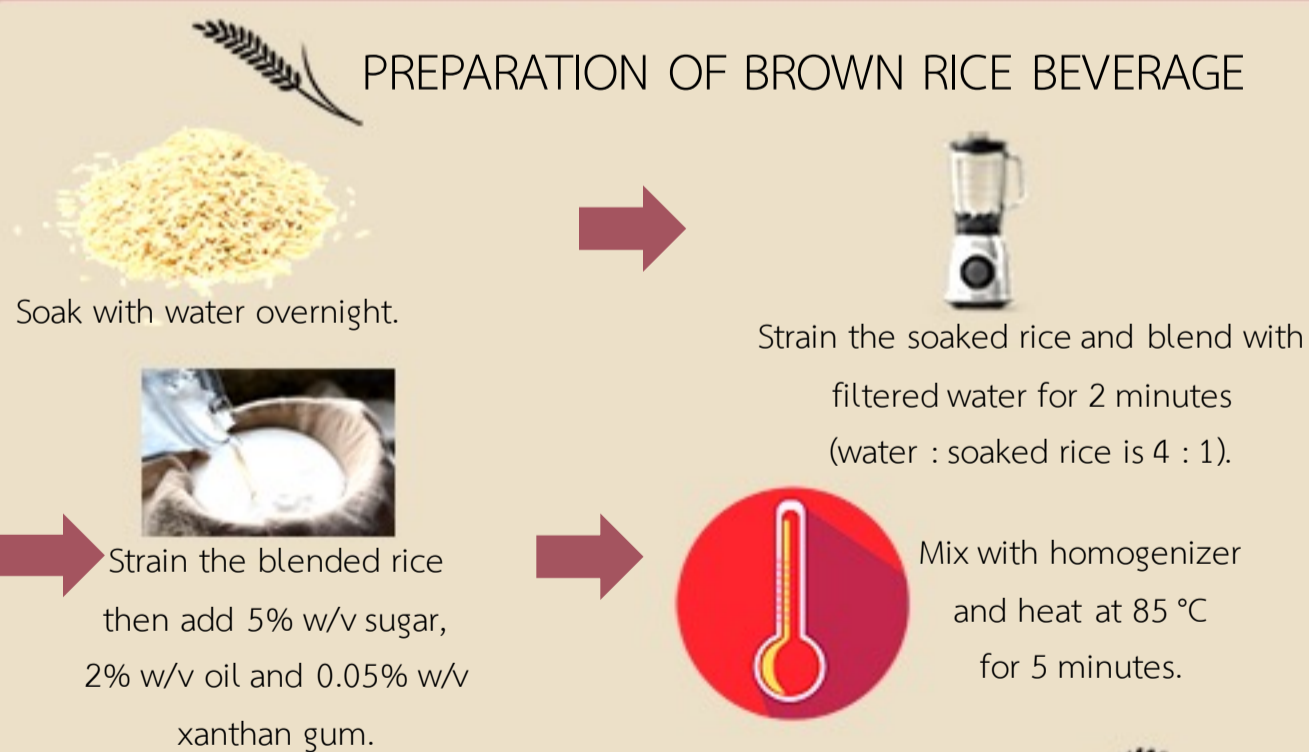


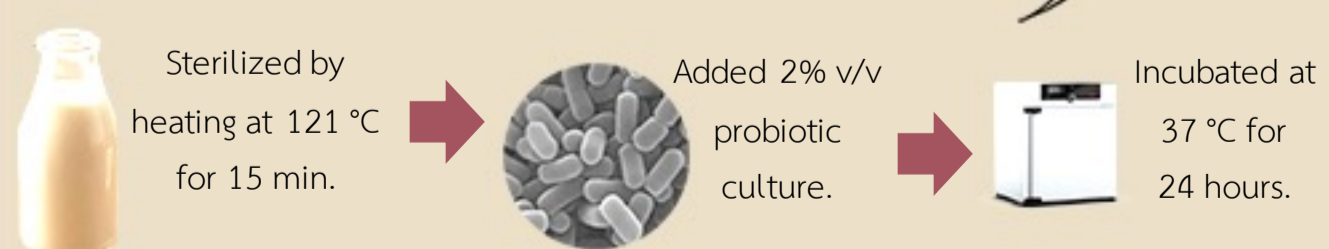
Fig 5. Sensory of brown rice beverage before added probiotics and after added probiotics.

METHODS

PREPARATION OF BROWN RICE BEVERAGE



ADDED PROBIOTIC IN BROWN RICE BEVERAGE



PREPARATION FOR SPRAY-DRY



CONCLUSIONS

After addition of probiotic, the pH values decreased and the viscosity increased. Viable cell count of brown rice beverage after added probiotic and spray drying were more than 10^6 CFU/ml.

REFERENCES

- ประกาศกระทรวงสาธารณสุข. (2554). การใช้จุลินทรีย์โปรไบโอติกในอาหาร. หน้า 21-25.
- ปิยภรณ์ บวรศิริดิษฐ. (2549). โรคแพ้โปรตีนในนมวัว. (ออนไลน์).
- Marimuthu, Krishnaveni; et al. (2014). Antioxidant potential of brown rice. *International Journal of Pharmaceutical Sciences Review and Research*. 28(1): 134-137.