

Acceptability of two types of fortified rice in a WFP school meal program in Cambodia



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Introduction

Micronutrient deficiency is a major health problem in many countries. In Cambodia, 47% of women and 62% of children are anemic, and >½ million children at risk for zinc deficiency. Fortification of staple foods is a cost-effective and suitable tool to improve micronutrient status of populations at risk for micronutrient deficiencies. Fortified rice for a school meals program would cost less than \$1 per year per school child and would provide an excellent opportunity to improve micronutrient status of school – age children. However, fortified rice has to be acceptable for both parents and children. Therefore, this study assessed acceptability of two different types of fortified rice (PATH UltraRice and DSM NutriRice) by teachers, parents and school children in 4 primary schools in a rural district in Cambodia using several different assessment tools.

Methods

Setting and subjects:

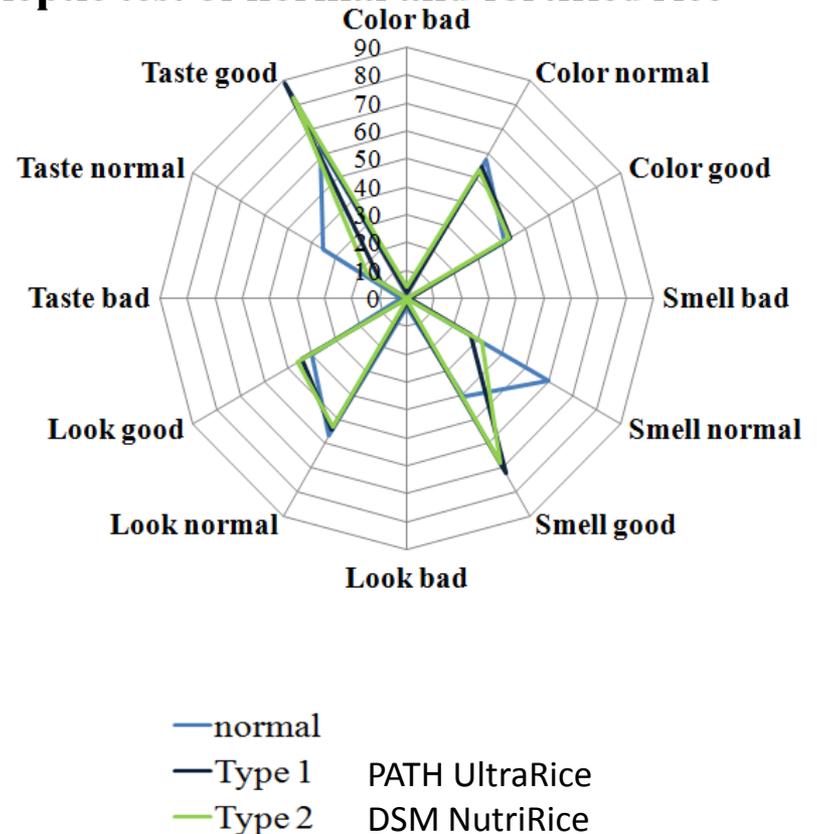
- At 4 primary schools in Kampong Speu province, teachers (n=34) and parents (n=224) were asked to identify fortified rice out of a choice of 3 (Triangle test) and to score organoleptic qualities of normal and fortified rice on a scale of 5.
- School children (n=1600) received 2 weeks of normal rice (control), and 2 x 2 weeks of fortified rice: PATH UltraRice ('Type 1') and DSM NutriRice ('Type 2'). Total amount of rice eaten per class each day was recorded.



Results

- Most teachers (62%) and parents (85%) correctly identified the cooked fortified rice out of a choice of 3 identical bowls ($P < 0.001$ for both).
- Normal and fortified rice were scored similarly, on a scale from 1-5, for color, smell, appearance, stickiness or hardness by teachers and parents ($P > 0.05$).
- School children ($n = 600$) scored fortified rice slightly better than normal rice for taste and smell.

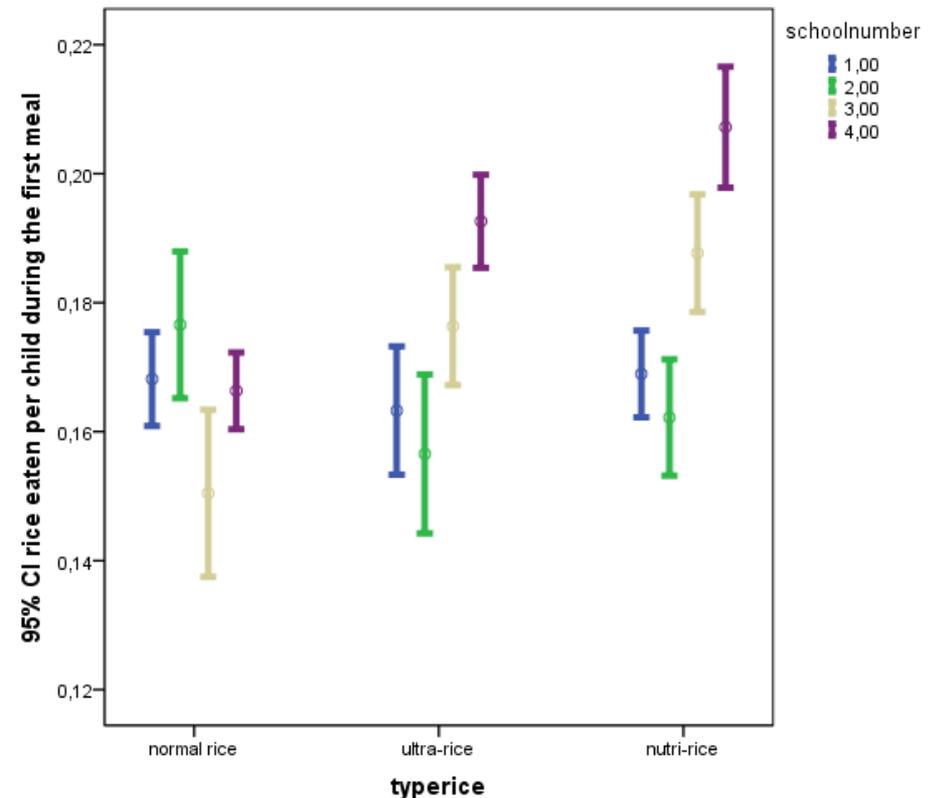
Organoleptic test of normal and fortified rice



Discussion

- Overall, fortified rice was consumed in similar or larger amounts than normal rice.
- Consumption of DSM NutriRice ('Type 2') fortified rice showed the largest increase.
- However, there was a significant interaction between schools, with some schools consuming significantly more rice of both types of fortified rice, and other schools consuming similar amounts of fortified rice in comparison to normal rice, with a larger variation in consumption.

Amount of rice consumed per child per school per type of rice



Conclusions

- Fortified rice was well accepted by school children, their parents and their teachers on organoleptic properties.
- Consumption of fortified rice was similar or better than normal rice.
- Consumption patterns differed among the schools, and variation in the amount of rice eaten by the school children increased with the introduction of fortified rice. Although consumption of NutriRice was slightly more than of UltraRice, this difference was not statistically significant, and both types of fortified rice were consumed more than normal rice.
- More research is needed on reasons for this increase in variability after the introduction of fortified rice, and more importantly, on the impact of fortified rice on the micronutrient status of school-age children. Additional studies to assess acceptability of fortified rice over a longer period of time are also needed.