

Traditional Indian Cereal and its Preparation as a Potent Micronutrient Vehicle

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Being born in Bengal I was mainly introduced to a very mainstream traditional “combo-meal” right from childhood, “bhaat-maachh” (rice and fish). These two foods individually or in combination are a part of every household menu each day in Bengal and parents and elders keep special vigil that the children never skip these two in their daily diet. Nevertheless, as I grew up and began studying and working in various parts of the country, I was confronted with the word “malnutrition” in more or less everywhere across the country. Also, being a food technologist and knowing the probable solutions to this National or International level phenomena it would have been unworthy of me to sit back and give it a deaf ear and a blind eye.

“Nutrition Supplements” as well as “Fortified Foods” are common prescriptions to malnutrition. Now, taking a closer look, these formulations have a huge potency in combatting the same but can these be a perfect solution to all economic levels of the country? Not at all. For most people across the country, the MRP of these products is just electrifying. Numerous attempts have been made to come up with cheaper solutions to the problem and some attempts were quite successful also. Now we have enhanced baby foods, milk with enhanced nutrients, oil, rice and many more foods that perhaps will successfully eliminate the problem to a substantial extent but the doubt still persists regarding the rural population. What or how much will they be able to afford these? Or will they at all give a thought to spend on these at all? I don't think so. Almost whole of our rural population depends on indigenously grown cereals, pulses and vegetables for their staple food hence penetration is extremely narrowed down. So, the solution that can be termed as “perfect” is a big challenge.

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The government has made numerous efforts across the country but those too have their limitations. For example, fortified rice introduced into “Mid-Day Meal” Scheme could only cover the school-going children. Iron and folate tonics and pills were apprehended by people to have abortive effects. Fortified grains of darker colours were thought to be insect invaded or damaged grains and were removed during sorting prior to cooking. Hence, giving a thought to all these happenings I started working on fortifying my very own “Chal” or “Chawal” (rice) as we all call it at Birla Institute of Technology, Mesra. The technology being developed has certain aspects which will take it ahead of other available options in this regard. For example, this enhances or fortifies rice in its very native state and uses minimal changes in the traditional way of processing it. This is a physical method and can be easily adopted by existing rice mills by little additional modification.

Heat and water treatments are a mandatory operation for producing the rice consumed in most parts of India. It is during this step or what is technically called as parboiling that the modification will have to be introduced. The resultant grain will be one where the micronutrients will not be just at the surface of the grains but also in the inner layers. Thus, substantial reduction in washing losses is expected. While doing this, a serious problem was observed. Grains that were obtained had cracks and fissures which spoiled the appearance of the grains. These vanished on cooking but a person who will buy or a farmer who will sell it may have to undergo negative impacts because of this since he would not be selling cooked rice obviously. Also, fissured rice may end up getting broken during bulk and long transport to far-off places. Hence, the current stress is more on eliminating this issue. It must be added here that this problem is expected to be solved with ease as there are well-established methods already for the same.

Cooked rice is consumed either during lunch or dinner. That was the next level of thought. It meant that the progress may be limited as the menu is not the same during all meals of the day. As already said, introduction of novel products and change of eating habits is not a feasible option hence the changes needed had to be brought about keeping the menu intact. It was observed that even though the basic meal did not comprise of cooked rice but the morning and evening snacks were based out of the very same rice itself. And this is true for most parts of our country as we Indians are mostly dependent on cereals and pulses for our staples. Now, almost all of us may be aware of puffed rice or if not puffed rice then maybe “Laiyan” for northern Indians, “Bhel” for western Indians, “Mandakki” for southern and “Muri” for easterners. One may be astonished to know that “Muri” in some villages in eastern India is consumed as a substitute for cooked rice owing to its many-fold convenience. This may be consumed with regular vegetable mix or may be mixed with baked and fried nuts and pulses or may be spiced up like “Bhelpuri”. Processing of this snack is easy and requires very little skill. It can also be stored in bulk owing to its high shelf-life. “Muri” can also be further processed into desserts by introduction of sugar or jaggery or may be processed into a cereal bar.

Thus, the provision of enriched food can be achieved throughout the day if one can fortify the basic snacks also. “Muri” is just one of the many opportunities. The technology worked upon here has no special machinery requirement. Just the conventional processing of salting and puffing is sufficient with only a little change in operation during salting. A major parameter in both the

cases of rice and puffed rice is the amount of available micronutrient present in each or in other words how much of the nutrients present can be utilised by our body. Special care in terms of packaging and storage has been taken to prevent degradation or changeover to lesser utilisable forms because giving enriched meals will never suffice if the contents are very poor in terms of usability. Hence, the target of providing nutrition throughout the day as well as giving it in the form of conventional food is what the main objective of my PhD is looking forward to a healthy and nutritious India ahead.