

**Title:** A culture of yeasts to convert glucose in rice, pulses and grains batter in to alcohol, rather than lactic acid, to prevent obesity

**Abstract:**

An alternate pathway to reduce blood glucose load with fermented grains, pulses and millets, Indian style, to offset Diabetes and hypertension owing to obesity resulting from a sedentary lifestyle.

**Author and Innovator:** Rajib Kumar Bandopadhyay

Simple starches are actually simple sugars when in blood. Excessive glucose in blood promotes microorganisms in the blood and thus, also infections and inflammation, and the resulting damage to the body, when ingested in excess as rice, dal or chapati.

Moreover, wheat has gluten that damages the insulin-producing 'beta cells' in the islets of Langerhans, pancreas, in response to food, to lower glucose levels in the bloodstream and promote the storage of glucose in fat, muscle, liver and other body tissues.

Which is why bread is better be avoided. Gluten-free bread increases overhead costs per meal for a limited economy like that of India and other developing countries.

My innovation has been to create a sub-specie of Yeast from Baker's/Brewer's yeasts, *Saccharomyces cerevisiae*, by using them in rice+pulses batter over a period of time. Bread yeasts decompose starch in to ethyl alcohol, carbon dioxide and water, \_rather than\_ lactic acid, carbon dioxide and water.

As idly and dosa are made from this special batter, ethyl alcohol evaporates, leaving behind only the healthy residue, without simple starches: which is effectively glucose.

The South Indian method of fermenting rice+pulses batter with micro-organisms, producing lactic acid, carbon

dioxide and water, an age-old practice dating back to prehistorical period, isn't a good practice. The microorganisms reported are:

Leuconostoc mesenteroides, Lactobacillus lactis, Lactobacillus delbrueckii, Lactobacillus fermentum, Lactobacillus coryneformis, Streptococcus faecalis, Pediococcus cerevisiae, Pediococcus pentosaceus, Lactobacillus plantarum, et al.

Lactic acid is reconverted back to glucose in the human liver. Moreover, lactic acid may cause bouts of anxiety in susceptible individuals. Lactic acid is very robust and doesn't decompose even in heat in excess of 550°C (Celsius).

The culture of yeasts created don't produce noticeable amounts of lactic acid, but only ethyl alcohol and carbon dioxide. Boiling point of ethyl alcohol is 78°C to 80°C (Celsius) near normal Room conditions.

However, large amounts of data is required, for which extensive use of an advanced laboratory for my research is required. Such as how much lactic acid is excreted from a human system per 100 grams of lactic acid fed to a healthy human with a normal diet. The experiment that could be set up would be a Double Blind Test:

Feeding 20grams of Lactic Acid in only one morning meal to healthy and resting individuals, and measure how much of that Lactic Acid is excreted out of their body over a period of next 24 hours. Every day for one month or until a stable biochemical/serum equilibrium is reached. The Lactic Acid could have a harmless Isotope Tracer, say  $^{18}\text{O}_8$ , to help accurately quantify the exact amount excreted out on a 24-hour period. Also, the serum lactate level has to be recorded over the next 24-hour period. Every day for the entire course of the controlled test. Also, a daily psychological profiling of every individual undergoing the test has to be kept to withdraw them from the test if any unnatural imbalance is observed.

This would help compute how much Lactic Acid the body is retaining, and having that converted back into glucose by liver.

Also to improve the culture further, so that only the

best possible yeasts are retained that decompose rice+pulses batter to the maximum possible extent, a robust laboratory set up and infrastructure is desirable.

Various means to separate glucose from rice+pulses have been contemplated and evaluated. The efficacy of ultra-centrifuge for separating glucose from cereals versus overhead costs incurred has been computed.

But the bottom line is that the process is not very highly efficient and cost-effective, leaving aside the overhead costs for using an ultracentrifuge and in its maintenance and upkeep.

Intent is for this innovation to percolate down the lowest strata of civilians for collective benefit and relieve my fellow Bharatiya from the menace of diabetes and hypertension.

First sent to Neeti Aayog, India, by email dated Thu, 24 Sep 2020 23:22:48 +0530, with the subject:

*A culture of yeasts to convert glucose in rice+pulses batter in to alcohol, carbon dioxide and water, rather than lactic acid, carbon dioxide and water*

Acknowledged by Neeti Aayog. Was followed up with a request for research data on Lactose metabolism, but no information received.