

BMJ NUTRITION PREVENTION & HEALTH

Externally peer reviewed? Yes
Evidence type: Feasibility study
Subjects: Women

Fortifying tea with folate and vitamin B12 may help counter serious health issues in Indian women

High levels of anaemia and neural tube defects linked to these nutritional deficiencies

Fortifying tea with folate and vitamin B12 may help counter the high levels of anaemia and neural tube defects associated with these widespread nutritional deficiencies in Indian women, suggest preliminary findings, published in the online journal **BMJ Nutrition Prevention & Health**.

Most women of childbearing age in India eat a poorly balanced diet, resulting in chronic folate and vitamin B12 deficiencies.

Although many countries have successfully fortified flour with folate nationally to ward off neural tube defects, logistical issues make this strategy difficult to implement in India.

This is because around 70% of the population lives in over 650,000 rural villages, where cereal grain is more often grown, milled, and purchased locally. And diets vary considerably according to cultural, religious, and ethnic differences and beliefs.

Besides water, tea is the most common beverage drunk in India. It's cheap, and is largely grown and processed in the highlands of only 4 states: Assam, West Bengal, Tamil Nadu and Kerala.

A single daily cup might therefore provide an ideal vehicle for fortification with these water-soluble vitamins, the study authors thought.

To test this out, they divided 43 young women (average age 20) from Sangli in the state of Maharashtra into three groups.

The women were asked to use teabags laced with therapeutic doses of 1 mg folate plus either 0.1 mg vitamin B12 (group 1; 19 women) or 0.5 mg vitamin B12 (group 2, 19 women), or to use unfortified teabags (group 0, 5 women) in a daily cup of tea for 2 months.

Their serum vitamin and haemoglobin levels were compared at the beginning and end of the study period.

Most women had anaemia with low to normal serum folate and below normal serum vitamin B12 levels at the start of the study.

After 2 months, there were significant average increases in serum folate levels of 8.37 ng/ml and 6.69 ng/ml in groups 1 and 2, respectively, compared with a rise of 1.26 ng/ml among the women in group 0.

Serum vitamin B12 levels rose to more than 300 pg/ml in more than half of the women in group 1 and in two thirds of those in group 2. Average haemoglobin levels also rose by 1.45 g/dl in group 1 and by 0.79 g/dl in group 2.

This is a feasibility study, involving small numbers of participants, so larger comparative studies would be needed before any firm conclusions could be drawn, say the study authors.

But they suggest that fortified tea could potentially be used in India in two ways: as a daily therapeutic dose of folate and vitamin B12 for all those with either borderline or low folate/vitamin B12 levels; as a lower (maintenance) dose to ensure the hundreds of millions who subsist on a nutritionally poor diet can still get these two nutrients every day.

And they conclude: "Tea is an outstanding scalable vehicle for fortification with folate and vitamin B12 in India, and has the potential to help eliminate haematological and neurological complications arising from inadequate dietary consumption or absorption of folate and vitamin B12."