

## **Clinical improvement of active tuberculosis patients with complex treatment and nutritional supplementation**

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Re-emergence and rapid spread of multi-drug resistant tuberculosis is on the rise in the immuno-compromised population in the world. Economically poor countries are reporting increasing incidence and deaths resulting from the bacterial strain of the TB bacteria (*Mycobacterium tuberculosis*) that is completely resistant to all of the available therapies.

It is critical to increase patient compliance and improved outcome for tuberculosis. We conducted an open label clinical study on 120 hospitalized patients, aged 20-65 years, and diagnosed with active pulmonary tuberculosis. These patients were given a specifically designed micronutrient supplement along with their standard TB drugs. Their outcome was compared to a control group of 100 patients recently treated in the same hospital.

After two months, the group of TB patients given the micronutrients demonstrated significant clinical improvement in the form of faster healing of the lung cavities (sign of active TB) in 98% of the cases versus only 69% of the patients in the control group who had similar healing with only TB drug regimen. The bacterial presence in the sputum was negative in all of the test group of patients (100%), while only 88% of the control group patients had a negative sputum test.

The standard TB drug treatment is known to be hepatotoxic. It can affect patient compliance and may lead to death due to liver failure. We observed a significant decrease in the drug adverse events in the micronutrient supplemented group as only 11% of these patients reported any such events, whereas 46% of the patients in the control group experienced mild to moderate adverse events.

Therefore, the micronutrient supplementation not only increased the efficacy of the standard TB treatment, it also reduced the side effects associated with the drug regimen.