

Probiotics reduce infections for patients in intensive care

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Traumatic brain injury is associated with a profound suppression of the patient's ability to fight infection. At the same time the patient also often suffers hyper-inflammation, due to the brain releasing glucocorticoids in response to the injury. New research published in BioMed Central's open access journal *Critical Care* shows that including probiotics with nutrients, supplied via the patient's feeding tube, increased interferon levels, reduced the number of infections, and even reduced the amount of time patients spent in intensive care.

In a small scale trial, based at North Sichuan Medical College and Hospital in China, 52 patients who had suffered traumatic brain injuries, and who were being treated in the <u>intensive care unit</u> (ICU), were either treated as usual or had their nutrition supplemented with probiotics.

Suppression of the immune system can be measured by an alteration of helper T-cells (Th) from Th1, which stimulate the action of macrophages to fight infection, to Th2. <u>Th2 cells</u> recruit B-cells which in turn are involved in <u>antibody production</u>. This switch from Th1 to Th2 leaves patients vulnerable to infections including ventilator-associated pneumonia and sepsis. Researchers involved in this trial monitored the TH1/Th2 switch by measuring levels of the Th1-associated signaling molecules (cytokines) IL-12 and <u>interferon gamma</u> (IFNy).

No differences were found between the groups of patients when they began the trial, and throughout the study all the patients had lower levels of IL-12 and IFN? than uninjured healthy controls. However by day 15



the patients who received the probiotics had significantly higher levels of both IL-12 and IFNy than the control patients. They also showed a decrease in the Th2-associated factors IL-4 and IL-10.

Prof Jing-Ci Zhu, the supervisor of this study from the Third Military Medical University School of Nursing in China, explained, "Probiotic treatment appeared to swing the Th1/Th2 balance back towards normality and, in our study, had beneficial effects. Possibly due to the small size of our study there was no significant difference in the number of infections between the groups (9 for the probiotic group, 16 for the control patients). However probiotic therapy reduced the number of infections occurring after seven days, reduced the number of different antibiotics needed to treat infections, and shortened the length of time the patients were required to stay in ICU."

Provided by BioMed Central

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