

A STRUCTURED REVIEW ON WHEY PROTEIN IN
RAISING LEVELS OF LYMPHOCYTE
GLUTATHIONE

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ABSTRACT

Glutathione which is an important intracellular antioxidant can be replaced in these cases by whey supplementation; a natural dietary protein which carries the limiting substrate cysteine needed in the formation of GSH. This structured review involved a compilation and summary of 5 clinical trials which tested on the efficacy of whey to significantly replace depleted stores of lymphocyte GSH in various diseases and conditions. Quality assessment of each paper were analyzed using the JADAD assessment tool for RCT's and the Newcastle Ottawa grading scale for non-RCT's. All five articles proved to have either a good or fair score. The first journal article by Kennedy RS (1995) was a retrospective case study which tested the use of whey protein concentrate in the treatment 7 women age 37-76 years with metastatic carcinoma. Baseline lymphocyte GSH varied for each patient in the represented graph ($\approx 2.5 \times 10(6)$ in patient 1, $\approx 2.75 \times 10(6)$ in patient 2 and $\approx 1.5 \times 10(6)$ in patient 3) and but were unknown in the rest. There were no involvement of exercise. Patients were supplemented with 30g daily Immunocal for 6 months. In 3 patients, the disease progressed with a trend toward higher lymphocyte GSH levels. Two patients exhibit signs of tumor regression, sustained drop in lymphocyte GSH towards normal. Increase in sense of wellbeing and maintenance of weight in the initial stage of supplementation was altered as the disease progressed. The second journal article by Lands LC et al (1999) studied the effects of supplementation of whey on the muscular performance of 20 healthy young adults' age ± 23 years. Ten subjects were given Immunocal 10g BD whereas the in the controlled group, another 10 were given equivalent amount of casein placebo. Duration of study was 3 months and 30-s isokinetic sprint cycling at 60rpm was involved. Baseline lymphocyte GSH in subjects' were $1.19 \pm 0.10 \times 10(6)$. Results demonstrated a 35.5% increase in lymphocyte GSH post whey supplementation. Clinical improvement were observed by the increase in overall physical activity, time spent for activity and overall muscle power. The third journal article by Grey V et al (2003) studied the improvement of glutathione status in young adult patients 24 cystic fibrosis age ± 25 years using whey protein. Thirteen were supplemented with Immunocal 10g/BD whereas 11 were given equivalent amount of casein in the controlled group for 3 months. Baseline lymphocyte GSH in the subjects were $1.62 \pm 0.32 \times 10(6)$. Results of the study showed that 10g BD Immunocal raised circulating lymphocyte GSH to 46.6% which was statistically significant ($P < 0.05$). The fourth journal article by Lothian JB et al (2006) studied the effects of whey protein in the modulation of immune response in 11 children with atopic asthma with mean age 12.6 ± 3.6 years. No exercise were involved in the study. Baseline lymphocyte pre-treatment was $1.75 \pm 0.48 \times 10(6)$. The children were supplemented with 10gBD HMS90 whey protein for 30 days. No significant changes in lymphocyte or whole blood GSH were noted. The fifth journal article by Zavorsky GS (2007) was a non- controlled randomized clinical trial involving 18 healthy adults age between 21-26 years. There were no exercise involved. Baseline lymphocyte GSH was 3.9 ± 0.9 in the first group, 3.4 ± 0.4 in the second group and 3.7 ± 0.4 in the third group. Participants were supplemented with pressurized whey isolate bars from InPro at a dose of 15g/d, 30g/d and 45g/d for 2 weeks. Significant raise was observed when 30g-45g /day were consumed. In conclusion, results showed that whey supplementation caused a modest increased in lymphocyte GSH.