Supplementation with alkaline minerals reduces symptoms in patients with chronic low back pain.


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Introduction: Chronic low back pain incidence is increasing with adults. The cause of low back pain is heterogeneous, it has been hypothesised that latent acidosis might contribute to these symptoms. Inadequate nutrition frequently provokes a depletion of base minerals which are needed for the renal excretion of excess acid. In consequence of a disturbed acid-base homeostasis acid metabolites are stored in the connective tissue and intracellular mineral content decreases. In several individual cases it could be observed that the physical status considerably ameliorates with the increased intake of base minerals. The present application trial investigates the effects of the multimineral supplement Basica® on symptoms in patients with chronic low back pain and specific markers of acid-base metabolism such as pH, blood buffering capacity and intracellular minerals are analysed.

Method: In an open prospective study 82 patients (aged 20 – 75 years, mean age 50 years) with chronic low back pain but without radicular symptoms exhibiting pain with at least 2 of 5 different conditions (back pain while sitting, standing, lying, walking or at night) and having a pain score of at least 6 on a visualized pain scale ranging from 0 to 10 were included. Patients with known lactose intolerance were excluded. Patients received a daily dose of 3 x 2 tee spoons of Basica® (30 g) over a period of 4 weeks without any further dietary recommendations. Throughout the whole investigation period patients received no further treatments such as massages. The use of analgesics was allowed as needed and documented. Intake of Basica® ended two days before the final examination. At the beginning and at the end of the 4 weeks intervention period the “Arhus low back pain rating scale” was applied to the patients. Total blood buffering capacity was determined by the method of Jörgensen. Intracellular mineral content of sublingual epithelial cells was measured by scanning electron microscopy based x-ray fluorescence analysis (EXA™ test) at the beginning and end of the intervention period.

Results: 1. Fig. 1 shows the significant decrease of the Arhus low back pain rating scale by 49 % from 41 to 21 points after patients with chronic low back pain (n=82) received daily 30 g of Basica® for 4 weeks; index ranging from 0 (fully devoid of symptoms) to 120 (total invalidity). 2. Splitting the index to pain, disability and physical impairment showed a significant and clinically relevant reduction of pain symptoms by 53 %. The use of nonsteroidal analgesics could be reduced considerably. Disability index dropped by 49 %. Quality of life and performing of simple daily tasks was highly improved with patients receiving Basica®. Also physical impairment of back and body was significantly reduced by 29 % (Fig. 2).

Fig.1: Arhus low back pain rating scale (Mean ± SEM, n=82, p<0.001). Significant difference between begin and end of the supplementation period with Basica®.
3. Analysis of acid-base markers showed a significant increase (p<0.001) of intracellular blood buffering capacity from 77.69 ± 6.79 to 80.16 ± 5.24 mmol/l (n=82). Blood buffering capacity was determined according to the method of Jörgensen measuring the intracellular alkaline buffering capacity of erythrocytes. To characterise acid-base homeostasis erythrocytes are representative for the remaining intracellular space which is inaccessible to examinations. Intracellular magnesium content of sublingual epithelial cells (EXA™ test) increased highly significant from 31.21 ± 2.94 to 34.82 ± 3.16 mmol/l (n=77) by 11 % while other intracellular minerals were not significantly changed, indicating a decrease of intracellular acid load.

Fig. 3: Different parts (pain intensity, disability, physical impairment) of the Arhus low back pain rating scale (Mean ± SEM, n=82, p<0.001). Significant difference between begin and end of supplementation period with Basica®.

Conclusion: The effect of the addition of the alkaline mineral supplement to the usual therapy in chronified patients resulted in a highly significant and – more important – clinically relevant reduction in pain symptoms. Overall, more than 90 % of all patients reported a clear improvement of pain symptoms. Especially the pain index consisting of pain score and use of analgesics within the Arhus rating scale was reduced. The index of physical impairment however dropped to a less degree indicating that a portion of the chronic changes cannot be reversed or are not due to disturbed acid-base homeostasis. Significant increase of both intracellular magnesium content and total blood buffering capacity indicate that intracellular acid accumulation was reduced. Discrete changes of blood pH or buffering capacity still within the normal range are indicators of an improved ability to cope with the surplus of acid. The results of this study show that a disturbed acid-base balance may contribute to the symptoms of chronic low back pain as presumed by theories of alternative medicine. The simple and safe addition of the alkaline multimineral preparate Basica® was able to reduce the pain symptoms in these patients with chronic low back pain significantly.