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Effect of calcium consumption on the spasticity in the spastic rat

Spasticity is a stiff muscle condition because the muscles receive impulses continuously. Calcium ions play a role in the ability of nerves to stimulate muscle contraction. Spasticity occurs because of the continuous flow of Ca^{2+} into the sarcomere which causes hyperexcitation. This study aimed to analyze the effect of calcium consumption on the changes spasticity and the relation of calcium levels in the blood and muscle to the spasticity. The experimental study was conducted on 42 male Sprague-Dawley rats aged 12-14 weeks. The 15-d intervention was conducted on six groups of spastic rats by administering 20 g of feed containing 50 mg, 100 mg, and 200 mg of calcium, it also received 100 mg, 200 mg, and 300 mg of calcium lactate supplementation. The experimental rats were induced with 80 mg/kg BW of Erythrocin B through the tail vein to make them spastic. This study showed a tendency of increased spasticity along with the increased dose of calcium given to the subjects. There were significant differences ($p=0.007$) in changes in spasticity between groups. The significant differences ($p=0.02$) in changes in blood calcium levels. The Spearman's correlations test on the changes in blood calcium levels and changes in spasticity showed a positive coefficient correlation ($r=0.097$) with a p-value of 0.54. An increase in blood calcium levels and a large

decrease in spasticity were found in the group receiving 100 mg calcium intake in 20 g of feed. The calcium levels in muscles had a significant correlation with spasticity ($p=0.038$, $r=0.810$). The calcium levels in the muscle had a strong correlation with blood calcium levels ($p=0.041$, $r=0.748$). The biggest decrease in spasticity occurred after 100 mg of calcium were given to the rats for 15 days, and it was considered as an optimal dose. The calcium levels in the muscles had a strong correlation with blood calcium levels and the spasticity of the spastic rat.

Speaker Biography

Marina Indriasari has completed her PhD at the age of 45 years from Bogor Agricultural University, Bogor, West Java, Indonesia. She is the lecturer of Faculty of Medicine and Health, Jakarta Muhammadiyah University, Jakarta, Indonesia. She has 8 publications that one of them have been viewed over 200 times and she has been serving as an editorial board member of reputed Journals. She runs a therapy clinic independently and practices as a physiatrist in a private hospital in Sukabumi, West Java, Indonesia. As her dedication to children with special needs, she consents to the habilitation of children's growth and development. She has been realizing the development of health services and children's growth and development therapy. She builds an inclusion school for children with special needs by establishing a friend's home foundation.

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