Interrelationship between aluminium, silicon and elements associated with tissue metabolism in the degenerated intervertebral disc in patients treated surgically

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The spine degenerative disease begins within the intervertebral disc (IVD). Degeneration of IVD is considered an unresolved problem of modern medicine. The main reasons for the IVD degeneration are age, diseases and undergoing operations. However, it is not taken into account what effect the elements, including aluminium, in the disc have or can have. We assumed that, the content of Al and metabolic trace elements may reflect biological processes within the IVD. The analyzed elements were different in terms of chemical and biological characteristics in order to evaluate mutual changes and relationships. The content of the elements were determined by spectrometric methods. We confirmed, for the first time, the similarity between Si and Al for human IVD. We found that, the properties of the end plate most likely allow that aluminium can be transported to the disc regardless of the stage of development and its content may depend on the intensification of metabolic processes within the disc.

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