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UAB Research Could Improve the Prognosis and Treatment of Lung Cancer

According to researchers, both the experiments using test tubes and cell cultures revealed that the enzyme lowers the levels of the most active form of vitamin A (retinoic acid), a strong anticancerous agent. This is achieved by its strong retinal reductase activity, which favours chemical reduction transformation, thus causing retinal, the precursor of retinoic acid, to transform into its least active form, retinol.

Retinoic acid is present in several biological processes - from fetus development to cell proliferation and differentiation - by controlling the expression of certain genes. The reduction of this acid within cells, which is precisely the effect produced by the enzyme under study, is linked directly to the lack of cell differentiation and therefore favours the development of the cancer. In order to discover why the enzyme acts this way, scientists obtained and studied its three-dimensional structure and located the elements responsible for its role in the onset of cancer among smokers. The identification of these structural elements makes it possible to create a specific design for drugs that can treat this disease. In fact, researchers were able to observe how the substance tolrestat, used as an inhibitor of the enzyme AKR1B1, or aldose reductase, responsible for many secondary complications of diabetes, also worked to inhibit the activity of the enzyme AKR1B10. Since both enzymes contain similar structures, research was carried out on its possible applications in the treatment of diabetes.

The research, published in the prestigious American journal Proceedings of the National Academy of Sciences (PNAS), was directed by Xavier Par

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