

# Scientists synthesize a new substance with antitumoral properties

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The laboratory for the synthesis of natural products where the work has been carried out. Credit: FEFU press-office

Scientists from Far Eastern Federal University have developed a new synthetic derivative of fascaplysin—a biologically active substance with antitumoral properties obtained from sea sponges. Biological tests have shown that the compound is two to three times more active than fascaplysin. The results of the study were published in the well-known

scientific journal *Tetrahedron Letters*.

The work has been carried out by the staff of the department of organic chemistry, School of Natural Sciences (SNS). According to Assistant Professor Maksim Zhidkov, scientists from the university have been involved in the synthesis of biologically active substances for over 20 years. The results of recent studies are several new derivatives of fascaplysin that are promising for studying antitumoral properties in cell cultures.

"Fascaplysin is a unique compound. The wide range of its biological properties includes the ability to selectively inhibit cycle-dependent kinase 4 (CDK 4) that is responsible for quick and uncontrollable mitosis of cancer cells. We tested the new derivative on the [cells](#) of cervical cancer and monocytic leukemia, and the results showed two to three times higher activity than in the initial fascaplysin," said Maksim Zhidkov.

According to the scientist, the study also included the development of another alkaloid that is relative to fascaplysin—6-oxofascaplysin. This compound was obtained for the first time from the well-known dye indigo.

"Currently, we are working on a method for obtaining a wide range of fascaplysin derivatives of the new type using computer modeling and molecular docking. Our calculations have shown that such a range is likely to contain promising candidates with an expressed antitumoral and analgetic effects," added Maksim Zhidkov.

**More information:** Maxim E. Zhidkov et al, Syntheses of the marine alkaloids 6-oxofascaplysin, fascaplysin and their derivatives, *Tetrahedron Letters* (2018). [DOI: 10.1016/j.tetlet.2018.01.023](https://doi.org/10.1016/j.tetlet.2018.01.023)

Provided by Far Eastern Federal University

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