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ANALYSIS OF THE CATALYTIC MECHANISM OF BIFUNCTIONAL TRITERPENE/SESQUARTERPENE CYCLASE IN ONOCEROID BIOSYNTHESIS

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The onoceroids are a group of triterpenes which are biosynthesized from squalene or (3S)-2,3-oxidosqualene by cyclization from both termini. The onoceroids are distributed among ferns, higher plants and animals. The functions of enzymes that are involved in onoceroid biosynthesis have attracted attention for a long time. Recently we discovered and identified a bifunctional triterpene/sesquaterpene cyclase (TC) from *Bacillus megaterium*, that forms a tetracyclic scaffold from tetraprenyl- β -curcumene (C35) substrate, but bicyclic from squalene (C30) in the first reaction. Afterward TC catalyzed the bicyclic intermediate as a substrate and converts it into tetracyclic and pentacyclic onoceroids in the second reaction. Here, we analyzed catalytic mechanism of a novel onoceroid synthase using mutated enzymes. The results suggested that the bulk size at Y167 position would be significant to terminate the cyclization of squalene at the bicyclic stage in onoceroid biosynthesis.

Biography

In 2006 Liudmila Tenkovskaia graduated from Far Eastern Federal University in Biotechnology, Russia. She was enrolled to doctoral program higher agricultural specialist program for the Russian Federation far East Graduate School of Science and Technology at Niigata University, October, 2015, Japan. The PhD major is life and food sciences. Liudmila is a 3rd year PhD student of bioorganic chemistry laboratory, department of applied biological chemistry. She is now processing her research work. the title of her research work is analysis of catalytic mechanism of bifunctional triterpene/sesquaterpene cyclase from bacillus megaterium. Her orientations are molecular biology, bioorganic chemistry and study of terpene biohynthesis.

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