

# Computation Assists Drug Discovery and Development

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Drug development remains to produce products that serve humanity. Even so, drug development requires a long and challenging step process. In fact, it can take years and is costly.

"The process of drug discovery is quite complex. It can take up to 8-16 years. Not only take a long time but also requires a high cost to be able to release one drug molecule," explained Professor of ITB Pharmacy School, Prof. Apt., Daryono H. Tjahjono, Ph.D., in the online seminar on New Perspectives on Drugs Discourse and Development in Industrial Revolution 4.0, which was held by the Faculty of Pharmacy UGM on Thursday (16/7).

However, he said computational methods or the use of computers can help process efficiency in drug discovery. The average price of producing one molecule with standard experiments is about 18 trillion.

"With the help of computing, the cost could be half. The progress of computing both software and hardware is very influential in the efficiency of the discovery of this drug," Daryono explained.

Besides, the computational method can also cut time in filtering thousands of molecules and find potential compounds that can be utilized as new drugs. Daryono also revealed that the method had been used in helping to find compounds that have the potential to prevent sleeping sickness or



trypanosomiasis, which is endemic in Africa. Through computing managed to find about 3-5 potential compounds from 4,803 compounds studied.

"This method is currently managed to find potential compounds to help prevent the SARS-Cov-2 coronavirus," he explained.

While herbal experts and Professor of the Faculty of Pharmacy UGM, Prof. Dr. Apt., Suwijoyo Pramono, on that occasion conveyed the great potential of herbal plants owned by Indonesia, even so, the potential is not well explored.

"There are 30 thousand species of plants that grow from Sabang to Merauke, and 3 thousand of them are components of our herbal medicine. Herbal industry have used for about 300 species of plants, and many are still unexplored," he explained.

Therefore, he said there should be an appropriate and effective exploration. It could start from not adding raw materials, arranging strategies for full exploration, selection of priorities from exploration programs.

Next, provide opportunities for industries to produce plant products based on research from higher education institutions with government facilitation. The government should conduct this step needs for product-oriented research.

Researcher and lecturer at the Faculty of Pharmacy UGM, Dr. Apt., Hilda Ismail, Ph.D., explained the experience in developing paracetamol in utilizing petrochemical industry products. Besides, she also conveyed the strategy of self-reliance of upstream and downstream raw materials by using natural materials sufficiently in their homeland.

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