

Black Pepper is Potential to Prevent Cancer

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Black pepper (*Piper nigrum* L.) is one of plant types that are often used for seasoning. Aside from being utilized to strengthen the food flavor, black pepper is also often used as an ingredient in medicine or traditional herb by Indonesian people.

Black pepper contains main active material that is piperine which is proven to have an antioxidant activity and pharmacological effects that can prevent the liver damage or hepatoprotective. In addition, it is also able to inhibit the tumor growth.

"Black pepper has piperine content around 32 percent. This compound has an antioxidant characteristic and it can neutralize the free radicals," said Ummi Maryam Zulfin, a student at Faculty of Pharmacy UGM.

Looking at the black pepper potential as an antigenotoxic agent or inhibitor of human's genes damage, Ummi and her colleagues from Faculty of Pharmacy UGM conducted an advanced research on the black pepper potential to prevent damage in DNA. The research was conducted together with Dian Saputri, Anisa Fauzia Ahsani, Ragil Anang Santoso, and Nur Fitra Sari under the supervision of Prof. Dr. Dra. Ediaty, S.E., Apt.

The research was done using a CHO-K1 cell which is a hamster ovary cell as the cell modeling to



observe its genotoxicity. Meanwhile, the test used Cytokinesis-Block Micronuclei (CBMN) specific testing method to see the presence of micronucleus as one of the genetic damage indicators. The tested sample was black pepper ethanol extract (EMH) which was obtained by maceration method. In the in vitro test, the result showed the black pepper ethanol extract that was combined with doxorubicin chemotherapy medicine can increase the cell cytotoxicity. Meanwhile, the CBMN assay showed the black pepper extract in the cell did not show the formation of micronucleus.

“It shows black pepper extract is potential to be an antigenotoxic agent in cells,” she added.

This result is strengthened with the testing result of the intracellular free radicals content. The test result showed EMH is able to decrease the number of free radicals in the cell.

“This research proves the black pepper extract potential to increase doxorubicin effectiveness, thus it can be developed as doxorubicin co-chemotherapy agent as an alternative cancer treatment,” said Ummi.

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