

Novel use for African mushroom found in cancer research

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Credit: PolyU

A young scientist from The Hong Kong Polytechnic University (PolyU)'s Food Safety and Technology Research Centre (FSTRC) has successfully prepared highly stable selenium nanoparticles by using the polysaccharide-protein complex extracted from the African Tiger Milk mushroom.

The preliminary study discovered that these stabilized selenium

nanoparticles can significantly inhibit the growth of [breast cancer](#) cells by [apoptosis](#).

With this breakthrough, FSTRC Associate Director Dr Wong Ka-hing, who is also an Assistant Professor of PolyU's Department of Applied Biology and [Chemical Technology](#), has won the Young [Investigator Award](#) in the 2011 International Conference of Food Factors (ICoFF 2011) with the theme "Food for Wellbeing-from Function to Processing".

Selenium is a trace element which is essential for [human health](#). The study of selenium nanoparticles has become a hot topic because of their excellent bio-availability, low toxicity and strong anti-cancer activity. However, nanoparticles would easily stick together, and their special properties would be lost once the aggregates exceed nano-size. That is why scientists around the world have been exploring ways to stabilize the nanoparticles.

Dr. Wong's award-winning study is entitled "Preparation of Highly Stable Selenium Nanoparticles with Anti-Cancer Activity under a Food Grade Redox System" – which means the ultimate products could be consumed as functional food or health products. The study is the first of its kind in terms of preparing highly stable selenium nanoparticles with the use of mushroom polysaccharide-protein complexes as the stabilizers. Apart from its potential as functional foods, the finding has also provided insights on using these novel nanoparticles as new drug for cancer chemoprevention.

In the next stage of cancer research, Dr. Wong would evaluate the anti-cancer activity of those stabilized selenium [nanoparticles](#) on small animals, and elucidate the underlying mechanism of their growth inhibition effects on the [breast cancer cells](#).

The polysaccharide-protein complex currently in use is extracted from the sclerotium of Tiger Milk mushroom. Dr. Wong would also further investigate whether its other developmental stages (e.g. fruiting body) could be used for this cancer research. PolyU has partnered with a mushroom farm to produce Tiger Milk mushrooms and support further research.

The ICoFF at which Dr. Wong received his award was organized by the Association of Agricultural Chemists (AOAC) International (Taiwan Section). This year more than 1,300 participants from 30 countries have attended the event, during which numerous international renowned scholars and experts were invited to give lectures on health promotion, diseases prevention and other health issues related to food.

Provided by Hong Kong Polytechnic University

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