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Polyphenols from Palm Oil: Are they more potent than resveratrol?

What are polyphenols?

Polyphenols are water-soluble compounds found largely in fruits, vegetables and nuts which have antioxidant and anti-inflammatory activities. Colourful fruits like cherries and berries are especially rich in polyphenols, and these are often called super fruits. The oil palm is indeed a super fruit as well, and rich in polyphenols. The major polyphenols in oil palm are three isomers of caffeoyl shikimic acid, p-hydroxybenzoic acid and protocatechuic acid.

How did you discover polyphenols in oil palm fruit?

When we started seeing oil palm fruit as a nutritious fruit, rather than a mere oil factory, we found powerful biocompounds in the non-oil component of the fruit. These compounds have both antioxidant and anti-inflammatory properties which could potentially help to prevent many modern lifestyle diseases which are increasingly prevalent - diabetes, neurodegenerative and cardiovascular diseases. We have published several research papers confirming the potent biological activities of palm polyphenols.

What is resveratrol and why is it celebrated as a potent antioxidant and anti-inflammatory compound?

Resveratrol is a polyphenol compound that plays a potentially important role in mitigating many degenerative disorders such as diabetes, heart disease and even ageing. The research on this chemical started with the “French paradox” where it was observed that the French have a relatively low incidence of heart disease despite consuming very rich diets. This was attributed to their consumption of red wine which is one of the richest sources of resveratrol. While it is true that resveratrol has important antioxidant and anti-inflammatory properties, many are not aware that oil palm is a rich source of polyphenol compounds, with even more potent antioxidant and anti-inflammatory properties.

What were the studies carried to confirm these benefits?

We carried out *in vitro*, animal, and clinical studies to validate the benefits and potency of the polyphenols in oil palm. We confirmed that the polyphenols had a whole range of biological activities which conferred cardio- and neuro-protective, anti-diabetic and anti-cancer properties.

How do polyphenols help combat these health issues?

There is increasing scientific evidence that most age-related degenerative conditions are caused by chronic low-grade inflammation which is triggered by oxidative stress. Oxidative stress is viewed as an imbalance between the production of reactive oxygen species and their elimination by protective mechanisms.

Polyphenols have both antioxidant and anti-inflammatory properties, so they can scavenge reactive oxygen species and inhibit pro-inflammatory pathways. Our modern lifestyle

associated with processed food, exposure to a wide range of chemicals, and lack of exercise plays an important role in generating oxidative stress. That is why we see an increase in inflammatory diseases such as diabetes, cancer and cardiovascular diseases. Taking polyphenol compounds everyday can potentially reduce these diseases, and studies are confirming this.

Which part of the oil palm fruit has the polyphenols and how are they extracted?

Polyphenols are water-soluble compounds unlike vitamin E, tocotrienols and carotenoids which are lipid soluble. They form the bright colours in the fruit. Since they are water soluble, polyphenols are extracted from the aqueous stream of palm oil milling.

What is the value of these polyphenols?

The oil palm polyphenols can enter the lucrative functional food and nutraceutical market. The global polyphenol market size is projected to reach USD 2.08 billion by 2025 (Grand View Research, March 2019).

The project has been successfully commercialised, and the world's first oil palm polyphenol production plant started operation in 2019 in Chiapas, Mexico. The first batch of commercial polyphenols was produced as a bulk ingredient for worldwide distribution in June 2019. The commercial bioactive product emerged as one of the top three new ingredients in the NutraIngredients USA 2019 Awards.

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Grand View Research (March 2019) Polyphenols Market Size Worth \$2.08 Billion By 2025 | CAGR: 7.2%
<https://www.grandviewresearch.com/press-release/global-polyphenols-market>
(Accessed on 8th November 2021)