

A NOVEL PROCESS FOR THE PRODUCTION OF WATER-SOLUBLE ANTIOXIDANTS WITH POTENTIAL NUTRACEUTICAL APPLICATIONS FROM PALM OIL MILL EFFLUENT (POME)

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The increasing popularity of nutritionally functional foods, or nutraceuticals, is evidence of the growth potential in this sector. This invention describes a simple process for the recovery of water-soluble antioxidants with potential nutraceutical applications from palm oil mill effluent (POME). The inventive process includes separation of the POME into different fractions using a combination of centrifugation and membrane filtration technologies.

THE PRODUCT

- Rich in flavonoids and phenolic-related compounds;
- Potent antioxidant and free-radical scavenging activities; and
- Nutritional evaluation:
 - Inhibits LDL-oxidation;
 - Inhibitory effects on cancer progression (cell culture and animal studies); and
 - Physiological antioxidant activity enhanced by its water-solubility.

These studies indicate that the products from the inventive process have applications in the nutraceutical and pharmaceutical industries. POME has traditionally been viewed as a source of low value products e.g. fertilizers and animal feed. This invention is a paradigm shift as it promotes POME as a valuable source of premium products.

Patents filed to date:

Malaysia : PI 980 4378
United States of America : US # 09/405,206
Indonesia : # P - 990892

IMPACT OF INVENTION

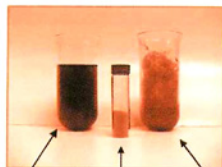
The production of palm oil generates vast amounts of by-products (POME) which may pose a potential threat

to the environment. Treatment and proper discharge of POME add extra costs to the industry. This invention presents an effective solution to this problem by converting POME into valuable nutraceuticals. The advantages of the invention are as follows:

- A process that simultaneously yields premium products with antioxidant and free-radical scavenging activities while tackling the problem of pollution from POME;

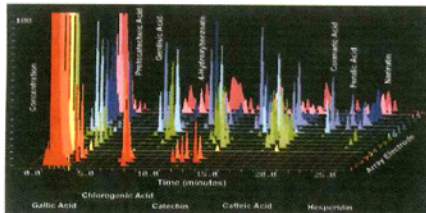


POME



Antioxidant-rich product

Liquid Powder Crystals



Oil Palm Flavonoids and Phenolics

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- Discovery of novel high value products from aqueous extract of POME for possible applications in the nutraceutical and pharmaceutical industries;
- The process is highly feasible and ready as a commercial venture;
- The abundance of POME from the palm oil industry ensures a reliable and constant source of supply;
- The worldwide shortage of flavonoid-rich sources makes this discovery especially significant;
- POME as a rich source of water-soluble nutraceuticals has been overlooked until now; and
- Man's greatest health concern this millennium is to combat degenerative diseases such as cancer and coronary heart disease. Nutraceuticals from natural sources are being actively sought and this invention meets such demands adequately.

RETURNS ON INVESTMENT

Initial investment for pilot plant: RM 2.5 million.
Estimated pilot plant production capacity: 200 kg mth⁻¹.
Estimated price of product: US\$ 100 (RM 380) kg⁻¹.
Estimated cost of production: RM 80 kg⁻¹.
Annual nett cash flow: RM 720 000.
The IRR over a 10-year life expectancy of the pilot plant is calculated at 25% and the estimated payback period is 3.5 years.

COMMERCIALIZATION

MPOB is in the process of commercializing the technology for pilot plant production to an interested party.

For more information kindly contact:

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