

Supplementary Information

Characterization and Application of Bioactive Compounds in Oil Palm

Mesocarp Fiber Superheated Steam Condensate as an

Antifungal Agent

Nur Sharmila Sharip,^a Hidayah Ariffin,^{*a,b} Mohd Ali Hassan,^a Haruo Nishida^c and Yoshihito Shirai^c

*^aDepartment of Bioprocess Technology, Faculty of Biotechnology and Biomolecular Sciences, Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia.
E-mail: hidayah@upm.edu.my; Fax: +60-3-89467510; Tel: +60-3-89467515*

^bLaboratory of Biopolymer and Derivatives, Institute of Tropical Forestry and Forest Product (INTROP), Universiti Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia

^cDepartment of Biological Functions and Engineering, Graduate School of Life Science and System Engineering, Kyushu Institute of Technology, 2-4 Hibikino, Wakamatsu, Fukuoka 808-0916, Japan

Supplementary data for manuscript “Characterization and Application of Bioactive Compounds in Oil Palm Mesocarp Fiber Superheated Steam Condensate as an Antifungal Agent”

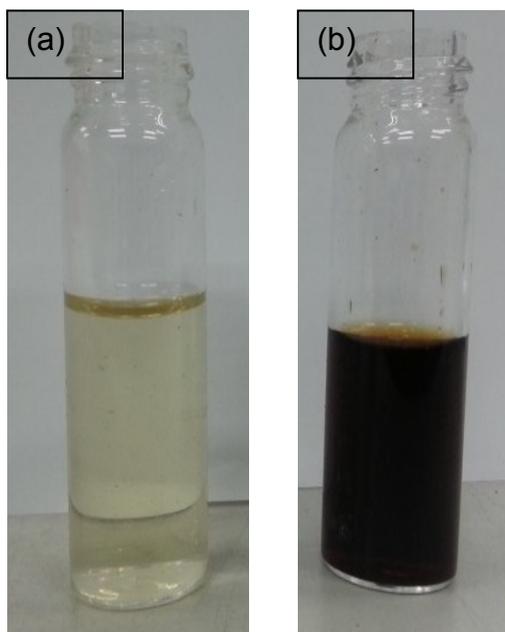


Figure S1 The color of steam condensate sample from superheated steam treatment at 240 °C. (a) original condensate sample (OS sample), and (b) concentrated condensate (RF fraction).

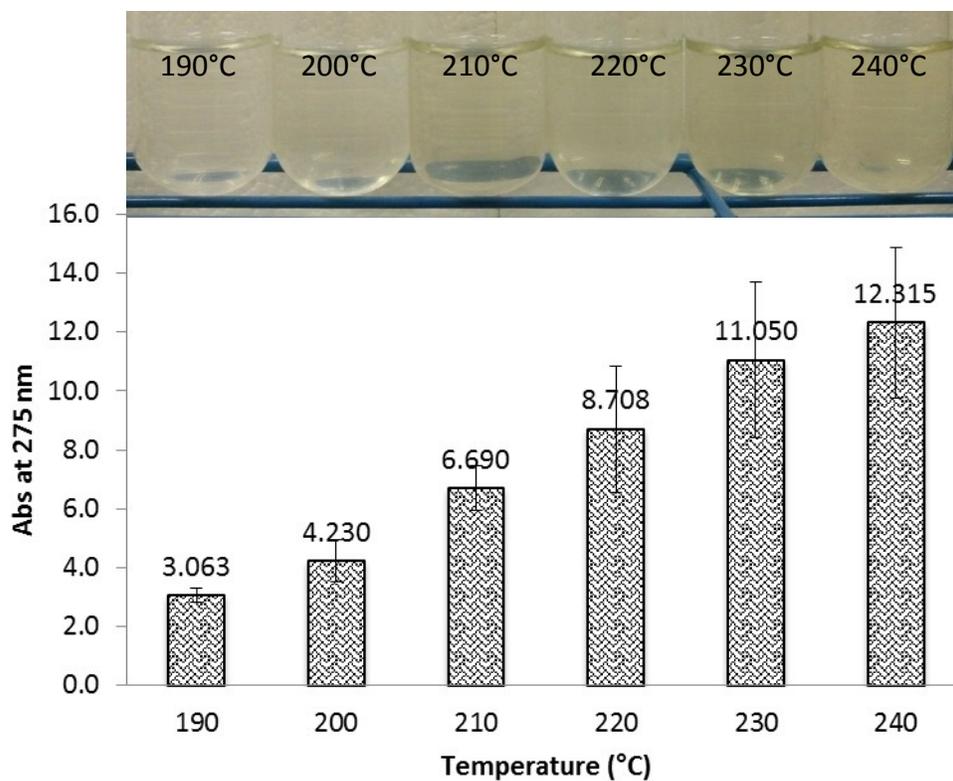


Figure S2 The increases of color intensity by visual and UV-Vis spectroscopy analysis of non-concentrated condensate (OS) from different SHS temperature

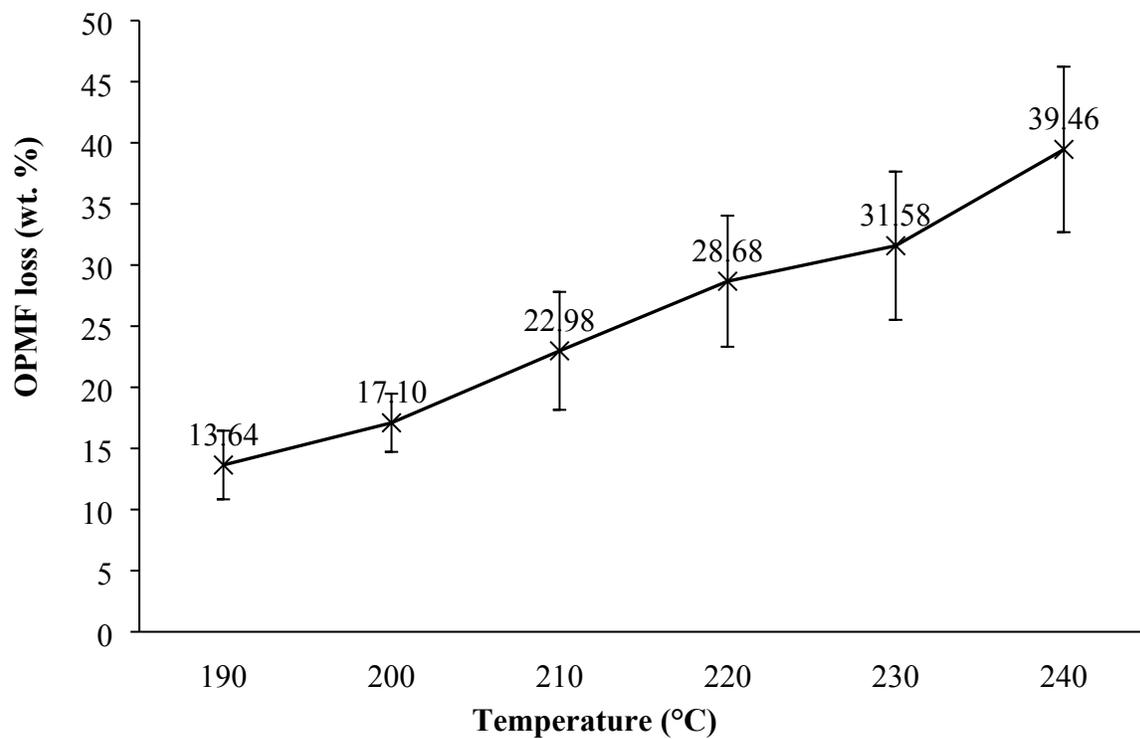


Figure S3 Percentage of OPMF weight reduction at different temperature

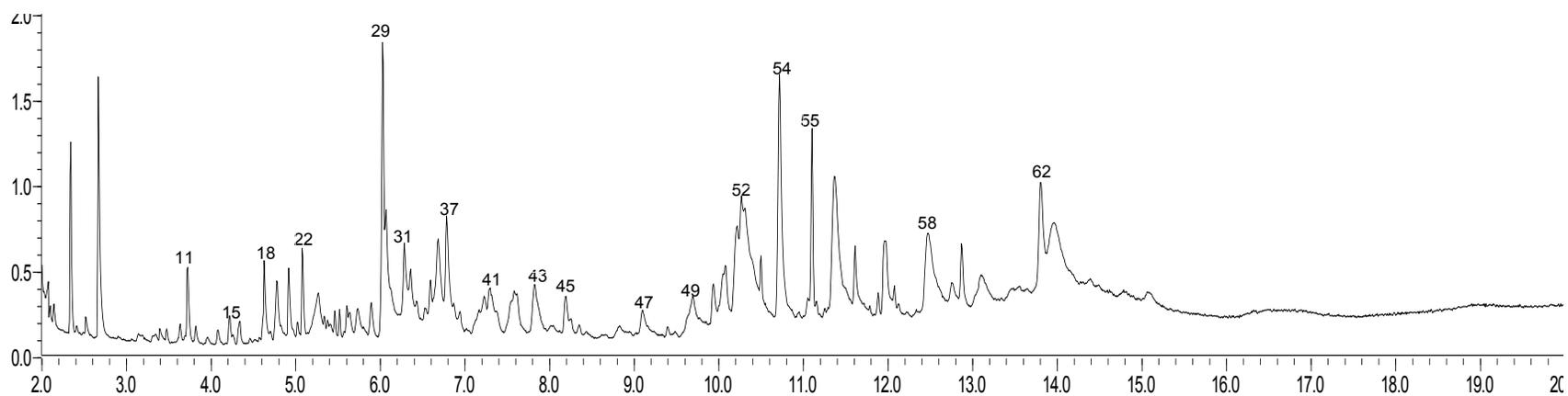


Figure S4 The GCMS chromatogram of RF fraction for OPMF from 240°C SHS temperature

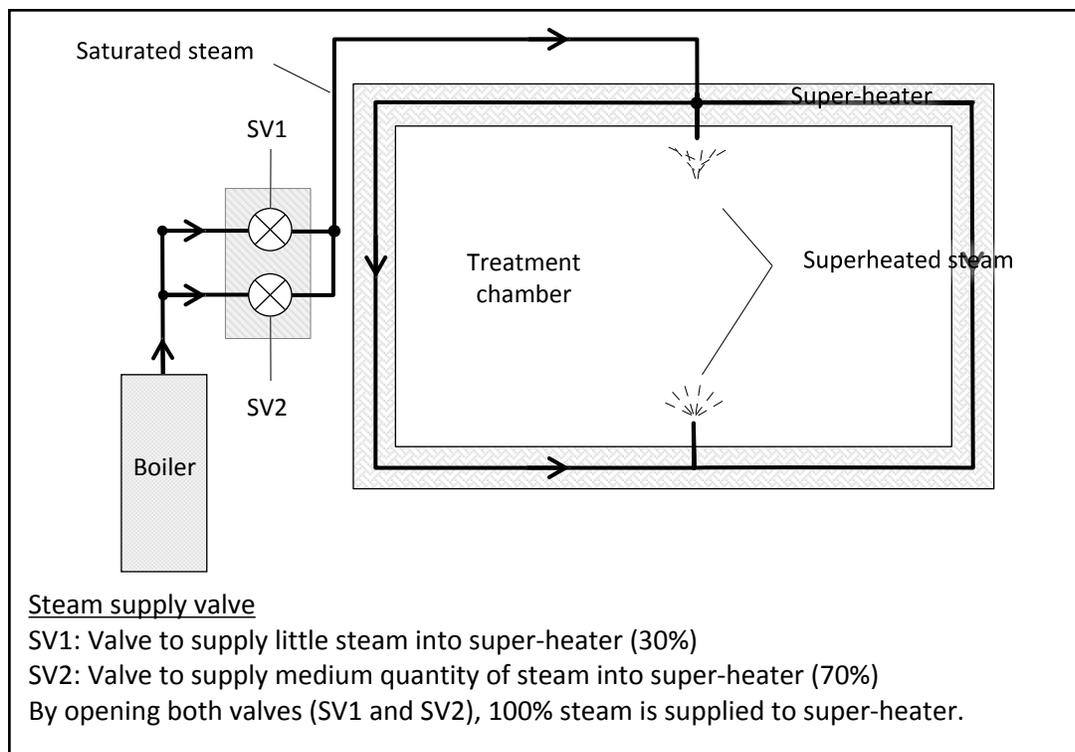


Figure S5 Steam supply control system of the SHS oven.

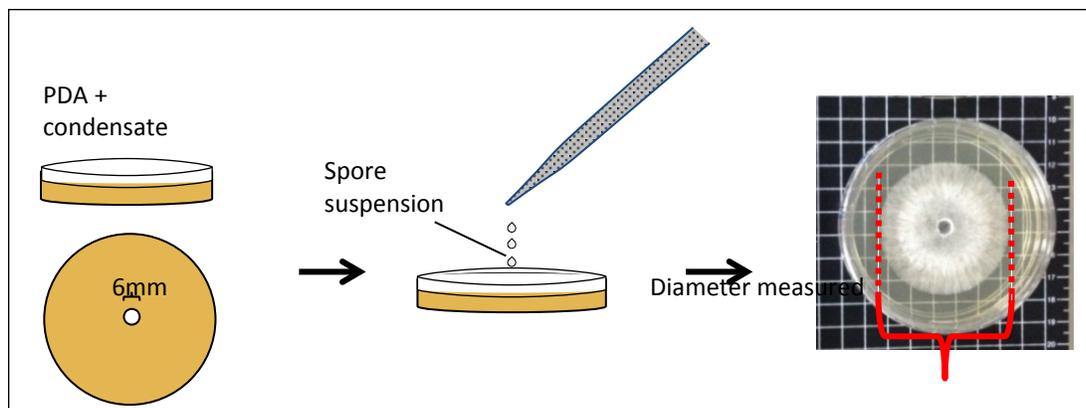


Figure S6 The illustration of agar dilution method.

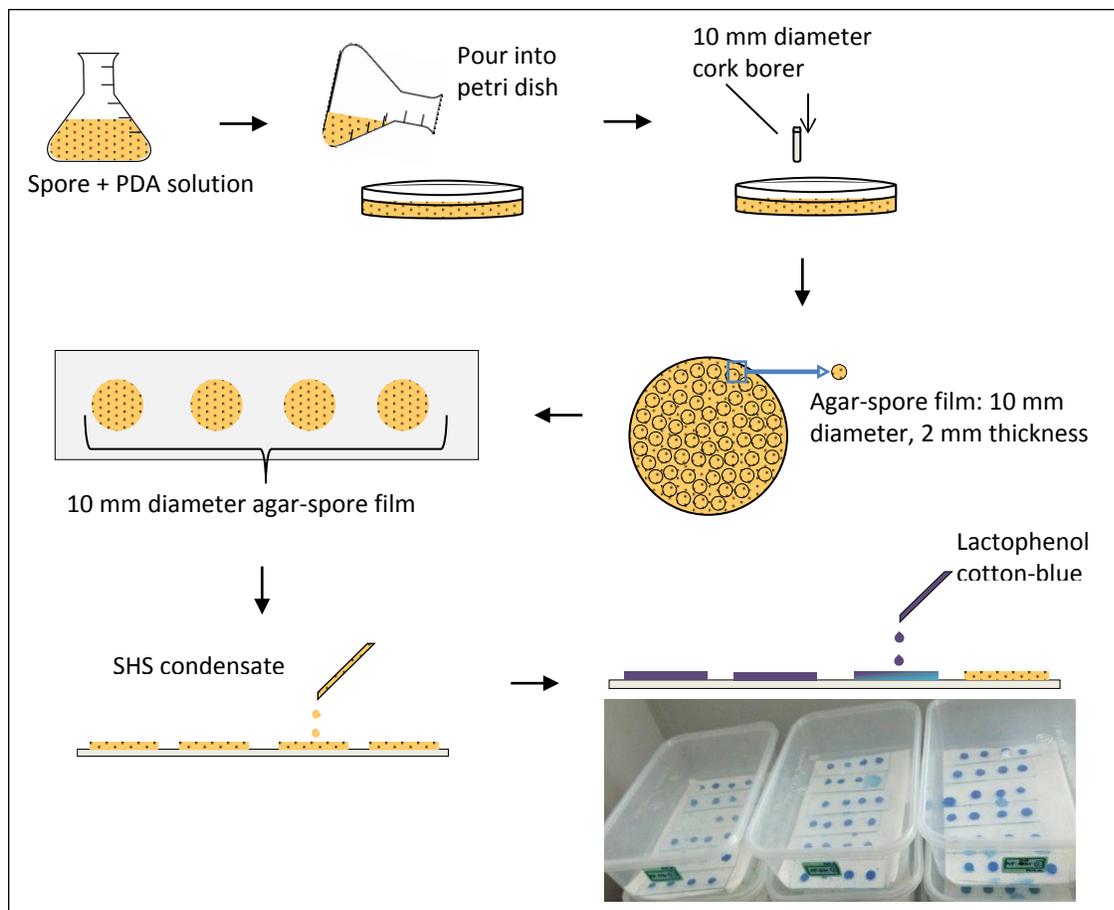


Figure S7 The illustration of steps involved in spore germination method.

Equation S1 Relative area concentration calculation

$$\text{Relative area percentage (\%)} = \frac{\text{area of compounds}}{\text{total area of most concentrated sample}} \times 100$$

i.e.:

Relative area percentage of phenolics in RF 190°C sample (%)

$$= \frac{\text{total area of phenolics in RF 190°C sample}}{\text{total area of all compounds in most concentrated sample (RF 240°C)}} \times 100$$

$$= \frac{4196658}{46167209} \times 100$$

$$= \underline{\underline{9.09\%}}$$