ABSTRACT Ganoderma boninense is a basidiomycetes fungus that causes basal stem rot disease (BSR) in oil palm trees. In Malaysia alone, the loss caused by this disease was estimated between RM 225 Million to RM 1.5 Billion in 2011 by Malaysian Palm Oil Board. Unfortunately, many planters do not realize that their fields were infected with BSR until it is too late. Several methods have been proposed for early detection of Ganoderma boninense infection. In this paper, Fourier transform infrared spectroscopy (FTIR) is investigated as a tool to detect the presence of Ganoderma boninense in oil palm tree.……(Ariel Narrow,11pt, Justify, Single Spacing).

KEYWORDS: Watercress; Gluconasturtiin; PEITC; Myrosinase activity; … (Please provide 5 suitable keywords)
aspect needs to be investigated further because food preparation commonly involved cutting, heating and addition of other additives which may affect the PEITC formation. Currently, there are still scarce reports on the dynamic of hydrolysis of PEGLS in watercress under various external factors. Thus, this paper described the effects of temperature and pH on myrosinase activity and PEGLS hydrolysis products in watercress.

BACKGROUND THEORY

The Beer-Lambert Law (italic in sentence-case)

Protocorm proliferation and regeneration were investigated on KC medium (Knudson C, 1946) supplemented with 2% (w/v) sucrose, and treated with organic additives or plant growth regulators. Four types of organic additives tested are coconut water, tomato juice (10%, 15% and 20% v/v), banana pulp (25, 75 and 125 g/L) and peptone (2 g/L). Plant growth regulators tested in this study are Naphthalene acetic acid (NAA), Zeatin and 6-Benzylaminopurine (BAP) at concentrations of 2, 4, 6 µM, respectively. Basal medium devoid of any organic additive or plant growth regulator served as control. The medium pH was adjusted to 5.3±0.02 and solidified with 0.8% (w/v) agar (Sigma) prior to autoclaving for 20 min at 15 psi, 121ºC. The cultures were maintained at 24±2 ºC under a 24 h d⁻¹ photoperiod with a PPF of 20–50 µmol m⁻²s⁻¹ provided by cool white fluorescent tubes (Philips, Malaysia).

The following is an example how equation is written given as:

\[ A_j = \log(1/R_j) = c \varepsilon_j I \]  

(1)

where \( A_j \) is absorption, \( R_j \) is reflection, \( c \) is the concentration of the ingredient, \( \varepsilon_j \) is extinction coefficient of the ingredient for wavelength \( \lambda \), and \( I \) is the pathlength of the light through the sample.

METHODOLOGY

Sample Collection (Maximum first level of subheading is allowed, sentence-case)

Healthy and infected tissues samples were collected from oil palm plantation in Sandakan, Sabah, Malaysia. Collection of trunk tissues was carried out following the method described by (Chong, 2012).

Preparation of Buffered Water and Bligh-Dyer

300 ml of double distilled water was transferred into a separating funnel and 2.04 g potassium dihydrogen phosphate (KH₂PO₄) was added to create a 0.05 M solution. The pH was adjusted to pH 7.2 by addition of sodium hydroxide (NaOH) pellets and the mixture was extracted with 3 x 50 ml dichloromethane (DCM). The Bligh-Dyer solvent mixture was made up using buffered water: chloroform: methanol with ratio 4:5:10, respectively.

RESULT AND DISCUSSION
In this result, the presence of *Ganoderma* in the infected tissue was detected with the similar peak absorbance in region.....

![Figure 1. FTIR spectra of *Ganoderma boninense*, healthy oil palm trunk tissues and infected oil palm trunk tissues (Alexander & Chong, 2013).](image)

**Table 1.** Functional Group of *G. boninense* mycelia and healthy oil palm trunk tissues. (Palatino Linotype, 11pt, centred, single spacing. If the caption is more than one line, please make it justify)

<table>
<thead>
<tr>
<th>Wavelength (cm(^{-1}))</th>
<th>Functional group</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500-3200</td>
<td>O-H (phenol)</td>
</tr>
<tr>
<td>3400-3200</td>
<td>N-H (amine)</td>
</tr>
<tr>
<td>1650-1600</td>
<td>C=O (amide)</td>
</tr>
<tr>
<td>1580-1500</td>
<td>C=N (imine)</td>
</tr>
<tr>
<td>1470-1450</td>
<td>C-H (alkane)</td>
</tr>
<tr>
<td>1400-1390</td>
<td>C-O(carboxylic acid)</td>
</tr>
<tr>
<td>1250-1000</td>
<td>C-O-C (ether)</td>
</tr>
<tr>
<td>1100-1000</td>
<td>Si-O (silicone)</td>
</tr>
</tbody>
</table>

**CONCLUSION**

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**ACKNOWLEDGEMENTS**

**REFERENCES** (Arrange the reference list in alphabetical order with numbering, in Palatino Linotype, 11pt.)


