OBJECTIVE

- To present the chromatographic profile of the root extract of *Pandanus sanderi*.

HYPOTHESIS

- Alkaloids, terpenoids and phytosterols are *Pandanus*’ major constituents.
EXAMPLES OF PANDANACEAE

• Unlike the green *Pandanus amaryllifolius* (pandan wangi), *P. sanderi* is variegated or having streaks of a different colors.
• It is characterized by longitudinal yellow and green stripes of the leaves.
• The yellow stripe is at the middle of two green stripes.

PHARMACEUTICAL PERSPECTIVE

• In India, the leaf extract is used to cure thyroid problem and to treat fever in Taiwan (Jong, T.-T. et al., 1998).

• Several species were reported to act as a remedy for toothache and rheumatism (Takayama, 2000).

• Busque, (2002) reported that *P. amaryllifolius* was used for strengthening the heart and as a diuretic.
### PHYTOCHEMICAL PERSPECTIVE

Various compounds from *Pandanaceae* species.

<table>
<thead>
<tr>
<th>Isolated compounds from <em>Pandanaceae</em> species</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Pyrrolidine Alkaloids</td>
<td>Takayama, H. et al. (2002)</td>
</tr>
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<td>4 Alkaloids</td>
<td>Takayama, H. et al. (2001)</td>
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<tr>
<td>5 2 phenolics, four lignans</td>
<td>Jong, T.-T. et al. (1998)</td>
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<tr>
<td>7 Isopentenyl and dimethylallyl acetates and cinnamates</td>
<td>I. Vahirua-Lechat et al (1996)</td>
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<td>8 Piperidine alkaloids</td>
<td>Nonato, M. G. et al. (1993)</td>
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<tr>
<td>9 Sesquiterpene hydrocarbons and monoterpene (linalool)</td>
<td>MacLeod, A. J. et al. (1982)</td>
</tr>
</tbody>
</table>

**Diagram:**

- Pandamarilactone-A
  - *C_{18}H_{25}NO_{4}*

- Pandamarilactone-I
  - *C_{18}H_{25}NO_{4}*

- norpandamarilactonine-A
  - *C_{18}H_{25}NO_{4}*

- norpandamarilactonine-B
  - *C_{18}H_{25}NO_{4}*

- Pandanamine
  - *C_{18}H_{25}NO_{4}*

An compound which is not a “natural product” (Salim et al., 2004)
Pandanus fruits were reported to contain provitamin A carotenoids (Englberger, L. et al., 2003; 2006).

**METHODOLOGY**

- Sample extraction
- Fractionation of crude extract
- Isolation of pure compounds
- Liquid-liquid partition
- Column Chromatography
- Thin layer chromatography (TLC)
- Preparative TLC
- HPLC
- Spectroscopy Analysis (NMR)
Outline of the normal extraction procedure

Grinding → Soaking → Dried plant powder → Extraction of Crude extract → Liquid partitioning

Hexane extract
Chloroform extract
Methanol extract

RESULTS & DISCUSSION

TLC of the root extract: long wave (hexane:acetone = 50:50)

TLC of the root extract: short wave (hexane:acetone = 80:20)
Results and discussion: Chromatograms

(i) $\lambda = 210, 280$ and $360$ nm

C18 column: (i) 4.6 x 150 mm

(ii) $\lambda = 210$ nm

(iii) $\lambda = 280$ nm

(iv) $\lambda = 360$ nm

C18 column: (ii) – (iv) 4.6 x 250 mm

Pandanus sanderi - Root - MeOH fraction

HPLC Agilent Technologies’ Zorbax® C-18; 4.6 x 250 mm, 5 $\mu$m, CH$_3$CN:H$_2$O, 10 to 90%; 38 min, flow rate: 1 ml/min, $\lambda$=210, 280, 360 nm
**Pandanus sanderi** Root- Hexane fraction

**HPLC Agilent Technologies’ Zorbax® RX-Silica; 4.6 x 250 mm, 5 μm, Hexane:EtOAc, 10 to 90%; 40 min, flow rate: 1 ml/min, λ = 210, 280, 360 nm**

Results and discussion: Chromatogram

• $t_R = 18 – 36$ minutes could be isolated and subjected for fractionation.

• The collection methods (at $\lambda = 210$ nm) are currently in progress, with the employment of the analytical guard column.

The chromatograms that were produced, **with** and **without** the utilization of the analytical guard column (4.6 x 12.5 mm).
Pandanaceae will gain more attention in pharmaceutical investigations, food research and urban landscape improvement.

Future planning for a Pandanaceae plantation could encourage research and development in industrial, environmental and eco-tourism sectors.

REFERENCES


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Thank You…