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<th>Tienma and Alzheimer's disease</th>
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<td>Author(s)</td>
<td>Huang, Junjie</td>
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<td>Citation</td>
<td>Huang, J. (2010, March). Tienma and Alzheimer's disease. Presented at Discover URECA @ NTU poster exhibition and competition, Nanyang Technological University, Singapore.</td>
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<tr>
<td>Date</td>
<td>2010</td>
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<td>URL</td>
<td><a href="http://hdl.handle.net/10220/9072">http://hdl.handle.net/10220/9072</a></td>
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**Introduction**

- **Alzheimer’s Disease**
  - A progressive neurodegenerative disorder characterized by impaired memory and cognitive functions
  - The most common cause of dementia
- **Tienma (TM)**
  - The tubers of *Gastrodia elata*
  - A herb used in Traditional Chinese Medicine to treat headaches, dizziness, tetanus, epilepsy, etc.
  - Herb preparation and chemical constituents (e.g. gastodin) shown to have neuroprotective effects

→ Tienma for Alzheimer’s Disease?

**Aim**

To study the effect of Tienma extract on the amyloidogenic and non-amyloidogenic pathways of APP processing in N2a cell line (murine neuroblastoma)

**Methods**

- TM powder
- Aqueous extract
- ELISA for sAPPa
- Western blot
- N2a cell culture
- Culture supernatant
- Cell lysate
- 24 h

**Results**

- Tienma extract increases sAPPa level

![Graph showing sAPPa levels](image)

Figure 2. sAPPa levels in culture supernatant after 24 h exposure to Tienma extract by ELISA

Star denotes statistical significance compared with 0 μg/mL (Student’s t-test; P < 0.01).

- **Non-amyloidogenic pathway**
- **Amyloidogenic pathway**

![Diagram showing APP processing & Alzheimer’s Disease](image)

**Discussion**

- Tienma increases sAPPa levels, and hence enhances the non-amyloidogenic pathway.
- While the expression of ADAM10 is not altered, the increased sAPPa levels may be achieved by increased ADAM10 activity.

**Next Step**

- To check for changes in the generation of Aβ and the expression of γ-secretase
- To test for changes in ADAM10 and BACE activities
- To study the effects of longer exposure time to Tienma extract.

**Figure 3. Expression of the major α-secretase (ADAM10) and β-secretase (BACE) by Western blot**

**Figure 4. Expression of the major α-secretase (ADAM10) and β-secretase (BACE) by Western blot**

**Figure 5. Expression of the major α-secretase (ADAM10) and β-secretase (BACE) by Western blot**

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**Project Title:** Oriental Medicine and Dementia (Tianma and AD)

**Supervisor:** Asst Prof Klaus Heese