ข้อกำหนดในการจัดทำ e-poster เพื่อนำเสนอผลงาน

1. ลักษณะและขนาดของ e-poster

1.1 e-poster มีขนาด A0 แนวตั้ง (กว้าง 80 ซม. x สูง 120 ซม.) จัดส่งเป็นไฟล์ pdf ขนาดไม่เกิน 3 MB

1.2 ใช้ font ที่อ่านง่ายชัดเจน โดยชื่อเรื่องควรมี font size ไม่น้อยกวา 70 Points และเนื้อหาควรมี font size ไม่น้อยกว่า 28 Points

1.3 เนื้อหาภายใน e-poster เป็นภาษาไทย หรือ ภาษาอังกฤษ โดยสรุปเฉพาะใจความสำคัญให้กระชับชัดเจน ไม่ใช้คำฟุ่มเฟือย อาจมีภาพหรือตารางประกอบเพื่อสื่อความหมายแทนข้อความ เป็นต้น

1.4 รูปแบบและการตกแต่ง e-poster สามารถออกแบบได้อิสระ แต่จะต้องมีตราสัญลักษณ์ของคณะวิทยาศาสตร์ และ KUSTARS ปรากฏบน e-poster อย่างชัดเจน

(สามารถดาวน์โหลดตราสัญลักษณ์ได้ที่ https://www.sci.ku.ac.th/kustars/logo/)

2. องคประกอบของ e-poster ประกอบดวย

2.1 Title, author(s), organization: ชื่อเรื่อง ชื่อผู้วิจัยและคณะผู้วิจัย สถาบันที่สังกัด (ภาควิชา, คณะ)

2.2 Abstract

2.3 Introduction: กล่าวถึงที่มา ความสำคัญ เหตุผลในการศึกษา หรือ แนวคิดทฤษฎีที่ต้องการพิสูจน์ เป็นต้น

2.4 Objective(s): ระบุถึงวัตถุประสงค์ของงานวิจัย

2.5 Methodology (Materials and method): สรุปสั้น ๆ ถึงหลักการ กรอบทฤษฎีที่ใช้ การวางแผนสำหรับกระบวนการวิจัย ระบุถึงเครื่องมือที่ใช้ เป็นต้น

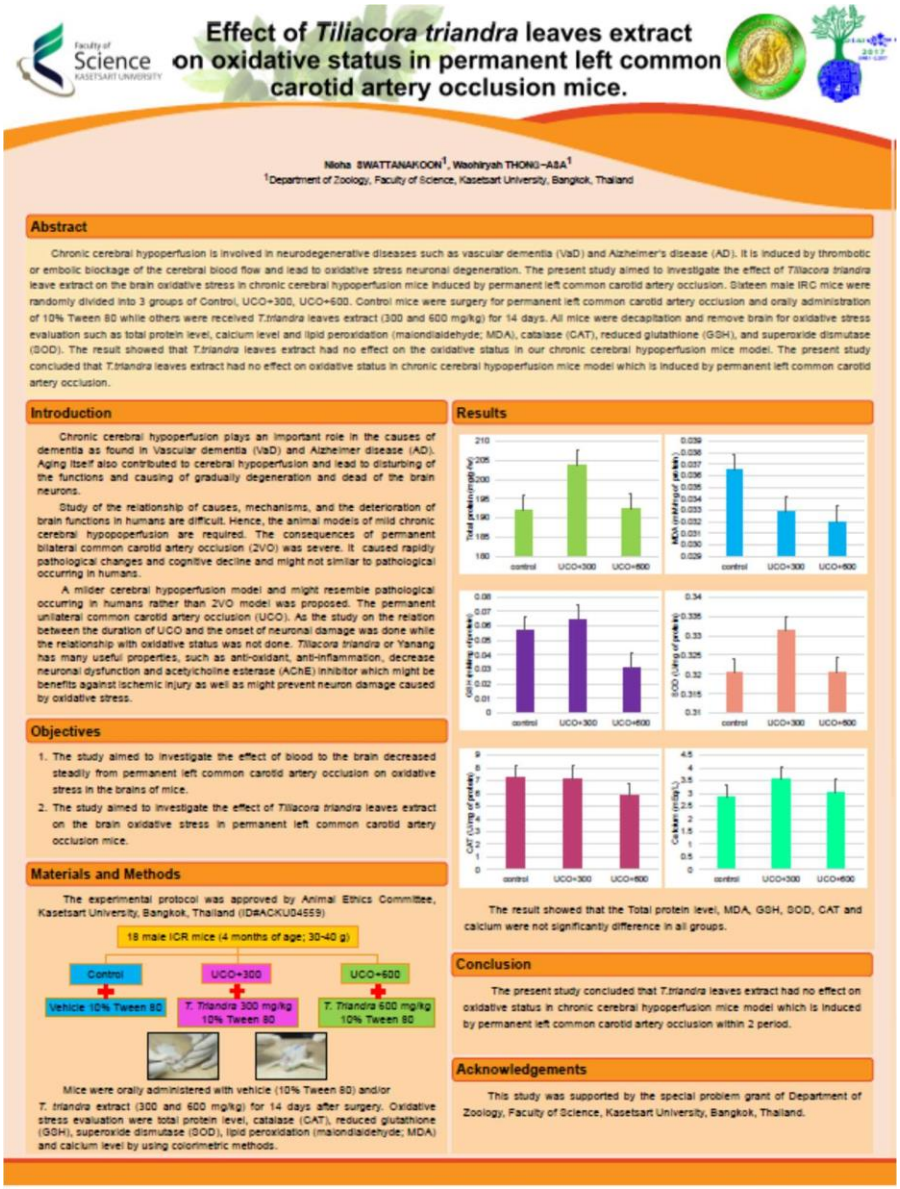
2.6 Result and Discussion: ระบถึงผลการศึกษาที่สำคัญสอดคล้องกับวัตถประสงค์และวิธีการศึกษา การค้นพบที่โดดเด่นที่สุดของงานวิจัยที่สามารถตอบคำถามของงานวิจัยได้ตรงและชัดเจนที่สุด

2.7 Conclusion: กล่าวถึงสิ่งที่ค้นพบจากการวิจัย ความสำเร็จของงานวิจัย การศึกษาวิจัยครั้งนี้ได้อะไร ประโยชน์ที่ได้ การนำไปใช้ประโยชน์หรือนำไปต่อยอด เป็นต้น

2.8 Reference: เลือกเฉพาะที่เกี่ยวข้องโดยตรงเท่านั้น

2.9 Acknowledgement

ตัวอย่างโปสเตอร์



Effect of *Tiliacora triandra* leaves extract on oxidative status in permanent left common carotid artery occlusion mice.

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Abstract

Chronic cerebral hypoperfusion is involved in neurodegenerative diseases such as vascular dementia (VaD) and Alzheimer's disease (AD). It is induced by thrombotic or embolic blockage of the cerebral blood flow and lead to oxidative stress neuronal degeneration. The present study aimed to investigate the effect of *Tiliacora triandra* leave extract on the brain oxidative stress in chronic cerebral hypoperfusion mice induced by permanent left common carotid artery occlusion. Sixteen male IRC mice were randomly divided into 3 groups of Control, UCO+300, UCO+600. Control mice were surgery for permanent left common carotid artery occlusion and orally administration of 10% Tween 80 while others were received *T.triandra* leaves extract (300 and 600 mg/kg) for 14 days. All mice were decapitation and remove brain for oxidative stress evaluation such as total protein level, calcium level and lipid peroxidation (malondialdehyde; MDA), catalase (CAT), reduced glutathione (GSH), and superoxide dismutase (SOD). The result showed that *T.triandra* leaves extract had no effect on the oxidative status in our chronic cerebral hypoperfusion mice model. The present study concluded that *T.triandra* leaves extract had no effect on oxidative status in chronic cerebral hypoperfusion mice model which is induced by permanent left common carotid artery occlusion.

Introduction

Chronic cerebral hypoperfusion plays an important role in the causes of dementia as found in Vascular dementia (VaD) and Alzheimer disease (AD). Aging itself also contributed to cerebral hypoperfusion and lead to disturbing of the functions and causing of gradually degeneration and dead of the brain neurons.

Study of the relationship of causes, mechanisms, and the deterioration of brain functions in humans are difficult. Hence, the animal models of mild chronic cerebral hypopoperfusion are required. The consequences of permanent bilateral common carotid artery occlusion (2VO) was severe. It caused rapidly pathological changes and cognitive decline and might not similar to pathological occurring in humans.

A milder cerebral hypoperfusion model and might resemble pathological occurring in humans rather than 2VO model was proposed. The permanent unilateral common carotid artery occlusion (UCO). As the study on the relation between the duration of UCO and the onset of neuronal damage was done while the relationship with oxidative status was not done. *Tiliacora triandra* or Yanang has many useful properties, such as anti-oxidant, anti-inflammation, decrease neuronal dysfunction and acetylcholine esterase (AChE) inhibitor which might be benefits against ischemic injury as well as might prevent neuron damage caused by oxidative stress.

Objectives

1. The study aimed to investigate the effect of blood to the brain decreased steadily from permanent left common carotid artery occlusion on oxidative stress in the brains of mice.
2. The study aimed to investigate the effect of *Tiliacora triandra* leaves extract on the brain oxidative stress in permanent left common carotid artery occlusion mice.

Materials and Methods

The experimental protocol was approved by Animal Ethics Committee, Kasetsart University, Bangkok, Thailand (ID#ACKU04559)

18 male ICR mice (4 months of age; 30-40 g)

- Control + Vehicle 10% Tween 80
- UCO+300 + *T. triandra* 300 mg/kg 10% Tween 80
- UCO+600 + *T. triandra* 600 mg/kg 10% Tween 80

Mice were orally administered with vehicle (10% Tween 80) and/or *T. triandra* extract (300 and 600 mg/kg) for 14 days after surgery. Oxidative stress evaluation were total protein level, catalase (CAT), reduced glutathione (GSH), superoxide dismutase (SOD), lipid peroxidation (malondialdehyde; MDA) and calcium level by using colorimetric methods.

Results

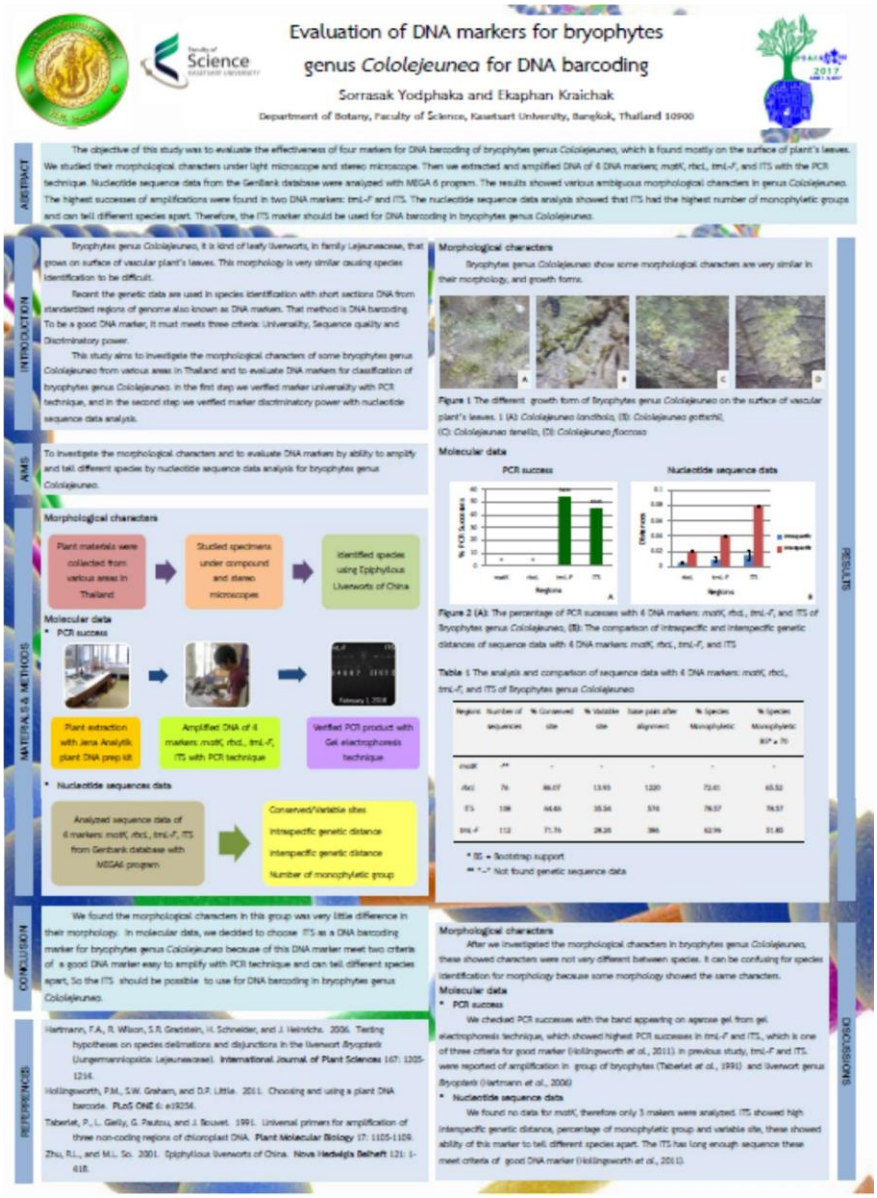
The result showed that the Total protein level, MDA, GSH, SOD, CAT and calcium were not significantly difference in all groups.

Conclusion

The present study concluded that *T.triandra* leaves extract had no effect on oxidative status in chronic cerebral hypoperfusion mice model which is induced by permanent left common carotid artery occlusion within 2 period.

Acknowledgements

This study was supported by the special problem grant of Department of Zoology, Faculty of Science, Kasetsart University, Bangkok, Thailand.



Evaluation of DNA markers for bryophytes genus *Cololejeunea* for DNA barcoding

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ABSTRACT

The objective of this study was to evaluate the effectiveness of four markers for DNA barcoding of bryophytes genus *Cololejeunea*, which is found mostly on the surface of plant's leaves. We studied their morphological characters under light microscope and stereo microscope. Then we extracted and amplified DNA of 4 DNA markers; *matK*, *rbcL*, *trnL-F*, and ITS with the PCR technique. Nucleotide sequence data from the GenBank database were analyzed with MEGA 6 program. The results showed various ambiguous morphological characters in genus *Cololejeunea*. The highest successes of amplifications were found in two DNA markers: *trnL-F* and ITS. The nucleotide sequence data analysis showed that ITS had the highest number of monophyletic groups and can tell different species apart. Therefore, the ITS marker should be used for DNA barcoding in bryophytes genus *Cololejeunea*.

INTRODUCTION

Bryophytes genus *Cololejeunea*, it is kind of leafy liverworts, in family Lejeuneaceae, that grows on surface of vascular plant's leaves. This morphology is very similar causing species identification to be difficult.

Recent the genetic data are used in species identification with short sections DNA from standardized regions of genome also known as DNA markers. That method is DNA barcoding. To be a good DNA marker, it must meets three criteria: Universality, Sequence quality and Discriminatory power.

This study aims to investigate the morphological characters of some bryophytes genus *Cololejeunea* from various areas in Thailand and to evaluate DNA markers for classification of bryophytes genus *Cololejeunea*. In the first step we verified marker universality with PCR technique, and in the second step we verified marker discriminatory power with nucleotide sequence data analysis.

AIMS

To investigate the morphological characters and to evaluate DNA markers by ability to amplify and tell different species by nucleotide sequence data analysis for bryophytes genus *Cololejeunea*.

MATERIALS & METHODS

Morphological characters

Plant materials were collected from various areas in Thailand → Studied specimens under compound and stereo microscopes → Identified species using Epiphyllous Liverworts of China

Molecular data

- PCR success

Plant extraction with Jena Analytik plant DNA prep kit → Amplified DNA of 4 markers: *matK*, *rbcL*, *trnL-F*, ITS with PCR technique → Verified PCR product with Gel electrophoresis technique

- Nucleotide sequences data

Analyzed sequence data of 4 markers: *matK*, *rbcL*, *trnL-F*, ITS from Genbank database with MEGA6 program → Conserved/Variable sites; Intraspecific genetic distance; Interspecific genetic distance; Number of monophyletic group

RESULTS

Morphological characters

Bryophytes genus *Cololejeunea* show some morphological characters are very similar in their morphology, and growth forms.

Figure 1 The different growth form of Bryophytes genus *Cololejeunea* on the surface of vascular plant's leaves. 1 (A): *Cololejeunea landtboia*, (B): *Cololejeunea gottschii*, (C): *Cololejeunea tenella*, (D): *Cololejeunea floccosa*

Molecular data

PCR success | Nucleotide sequence data

Figure 2 (A): The percentage of PCR successes with 4 DNA markers: *matK*, *rbcL*, *trnL-F*, and ITS of Bryophytes genus *Cololejeunea*, (B): The comparison of intraspecific and interspecific genetic distances of sequence data with 4 DNA markers: *matK*, *rbcL*, *trnL-F*, and ITS

Table 1 The analysis and comparison of sequence data with 4 DNA markers: *matK*, *rbcL*, *trnL-F*, and ITS of Bryophytes genus *Cololejeunea*

Regions	Number of sequences	% Conserved site	% Variable site	Base pairs after alignment	% Species Monophyletic	% Species Monophyletic BS* ≥ 70
matK	**	-	-	-	-	-
rbcL	76	86.07	13.93	1220	72.41	65.52
ITS	138	64.66	35.34	576	76.57	76.57
trnL-F	112	71.76	28.24	386	62.94	31.45

* BS = Bootstrap support

** "-" Not found genetic sequence data

CONCLUSION

We found the morphological characters in this group was very little difference in their morphology. In molecular data, we decided to choose ITS as a DNA barcoding marker for bryophytes genus *Cololejeunea* because of this DNA marker meet two criteria of a good DNA marker easy to amplify with PCR technique and can tell different species apart, So the ITS should be possible to use for DNA barcoding in bryophytes genus *Cololejeunea*.

DISCUSSIONS

Morphological characters

After we investigated the morphological characters in bryophytes genus *Cololejeunea*, these showed characters were not very different between species. It can be confusing for species identification for morphology because some morphology showed the same characters.

Molecular data

- PCR success

We checked PCR successes with the band appearing on agarose gel from gel electrophoresis technique, which showed highest PCR successes in *trnL-F* and ITS, which is one of three criteria for good marker (Hollingsworth *et al.*, 2011). In previous study, *trnL-F* and ITS were reported of amplification in group of bryophytes (Taberlet *et al.*, 1991) and liverwort genus *Bryopteris* (Hartmann *et al.*, 2006)

- Nucleotide sequence data

We found no data for *matK*, therefore only 3 makers were analyzed. ITS showed high interspecific genetic distance, percentage of monophyletic group and variable site, these showed ability of this marker to tell different species apart. The ITS has long enough sequence these meet criteria of good DNA marker (Hollingsworth *et al.*, 2011).

REFERENCES

Hartmann, F.A., R. Wilson, S.R. Gradstein, H. Schneider, and J. Heinrichs. 2006. Testing hypotheses on species delimitations and disjunctions in the liverwort *Bryopteris* (Jungermanniopsida: Lejeuneaceae). **International Journal of Plant Sciences** 167: 1205-1214.

Hollingsworth, P.M., S.W. Graham, and D.P. Little. 2011. Choosing and using a plant DNA barcode. **PLoS ONE** 6: e19254.

Taberlet, P., L. Gielly, G. Pautou, and J. Bouvet. 1991. Universal primers for amplification of three non-coding regions of chloroplast DNA. **Plant Molecular Biology** 17: 1105-1109.

Zhu, R.L., and M.L. So. 2001. Epiphyllous liverworts of China. **Nova Hedwigia Beiheft** 121: 1-418.