

**INTERNATIONAL CONFERENCES ON FOOD & AGRICULTURE ADVANCED
TECHNOLOGY FOR SUSTAINABLE DEVELOPMENT (FAATSD 2022)**

The 24 - 27th November 2022

24th November 2022

Workshop: Metagenomics – Meeting room: E3.2

07:30 – 8:00	Registration
8:00 – 8:05	Welcome Address by Vice Rector of IUH (Assoc. Dr. Dam Sao Mai)
8:05 - 8:15	Address by Prof. Takashi Uemura, Osaka Prefecture University, Osaka, Japan
8:15 – 8:50	Keynote Speaker 1 Francesca De Filippis <i>Department of Agricultural Sciences, University of Naples Federico II, Italy</i> “Exploiting the microbiome of traditional fermented foods to improve food quality and human health”
8:50 – 9:20	Keynote Speaker 2 Tran Thi Mai Anh <i>Institute of Biotechnology and Food technology, Industrial University of Ho Chi Minh city</i> “Cocoa fermentation and its application in beverage production”
9:20-9:40	Keynote Speaker 3 (online) Le Van Diep <i>Cyber School, Vinh University.</i> “Biochemical profiling of Liquor Fermentation Starter”
9:40 - 9:50	Teabreak
9:50 – 10:40	Talkshow MC: Tran Thi Ngoc Invited guests: Francesca, Dam Sao Mai, VinaOrganics Co.Ltd., Kochu Company Co.Ltd.
10:40 – 11:00	Q&A
11:00 – 13:00	Lunch



The 2nd International Conference on Advanced Technology & Sustainable Development - ICATSD 2022



CỤC CÔNG TÁC PHÍA NAM



SỞ KHOA HỌC VÀ CÔNG NGHỆ THÀNH PHỐ HỒ CHÍ MINH

CERTIFICATE OF ATTENDANCE

This is to certify that

Dr. Le Van Diep

has attended as a **Keynote Speaker**

The 2nd International Conference on Advanced Technology and Sustainable Development – 2022 (ICATSD 2022)
and

The International Symposium for Green Solutions (ISGS 2022)

Organized by Industrial University of Ho Chi Minh City & Eastern International University
November 24th to 26th, 2022



Dr. Ngo Minh Duc
Rector of Eastern International University



Dr. Phan Hong Hai
Rector of Industrial University of Ho Chi Minh City



TRƯỜNG ĐẠI HỌC VINH
VIỆN NGHIÊN CỨU VÀ ĐÀO TẠO TRỰC TUYẾN

Biochemical profiling of *Liquor* Fermentation Starter

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Cyber School, Vinh University

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CONTENTS

- ✓ Biochemical profiling techniques;
- ✓ Application of metabolic profiling techniques in fermented foods;
- ✓ Introduction of Daqu;
- ✓ Manufacturing process of *Fen-Daqu*;
- ✓ Workflow of *Fen-Daqu* biochemical profiling;
- ✓ Workflow of *Fen-Daqu* volatile compounds profiling;
- ✓ *Fen-Daqu* biochemical profiling;
- ✓ *Fen-Daqu* volatile compounds profiling.
- ✓ Conclusion & Acknowledgement.

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Application of metabolic profiling techniques in fermented foods

Application of metabolic profiling techniques

- ✓ Metabolomic techniques combining Nuclear magnetic resonance (NMR) and PCA (AMIX software) or combined use of GC-MS and PCA (with SPSS software)... have been applied to the metabolic profiling of various kinds of fermented foods, as fermented soybean, wine, beer, cheese and etc...

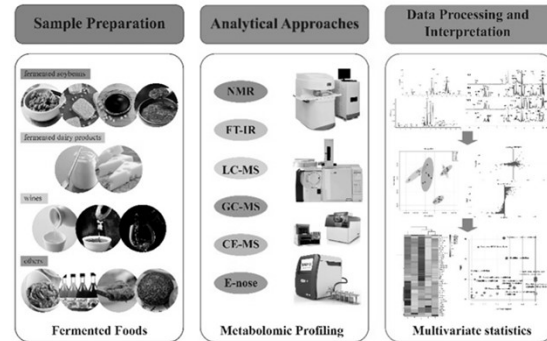


Figure 1. Schematic overview of the most important platforms used for metabolomics studies.

Gao, Y. et al. *Metabolomics Approaches for the Comprehensive Evaluation of Fermented Foods: A Review. Foods* 2021, 10, 2294.

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Biochemical profiling techniques

- ✓ To know what going on with biochemical compounds during the manufacturing process;
- ✓ Use to classify products (as a biomarker compounds);
- ✓ To monitor manufacturing process...

❖ Why focus on compounds in *Fen-Daqu* during the production...?

- ✓ Most of them are metabolites or degradation products;
- ✓ Some of them can serve as flavor precursors;
- ✓ Reflect the fermentation and biochemical reactions during producing Daqu;
- ✓ Be related to microorganism succession and microbiota during producing Daqu.

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Daqu - Introduction

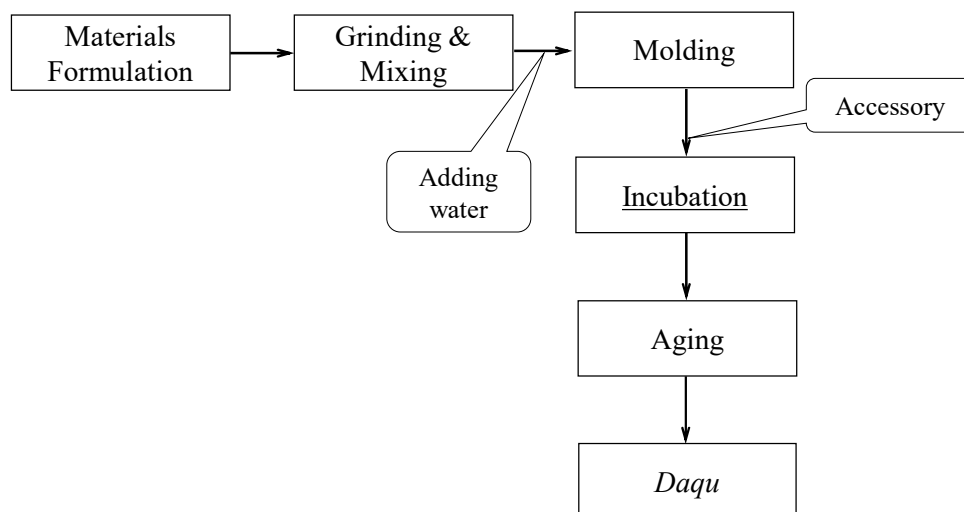
Daqu is a saccharifying and fermenting agent for the production of Chinese liquor, which has significant impact on the flavour of the product.



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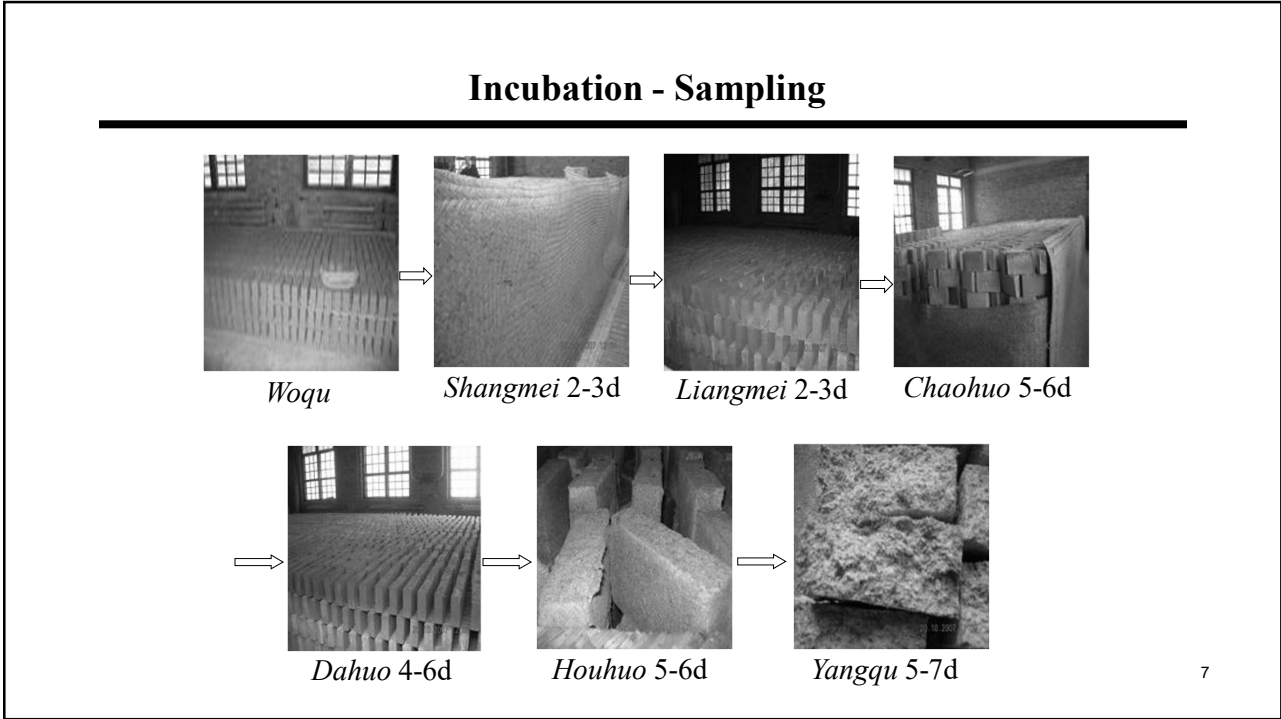
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Manufacturing process of *Fen-Daqu*

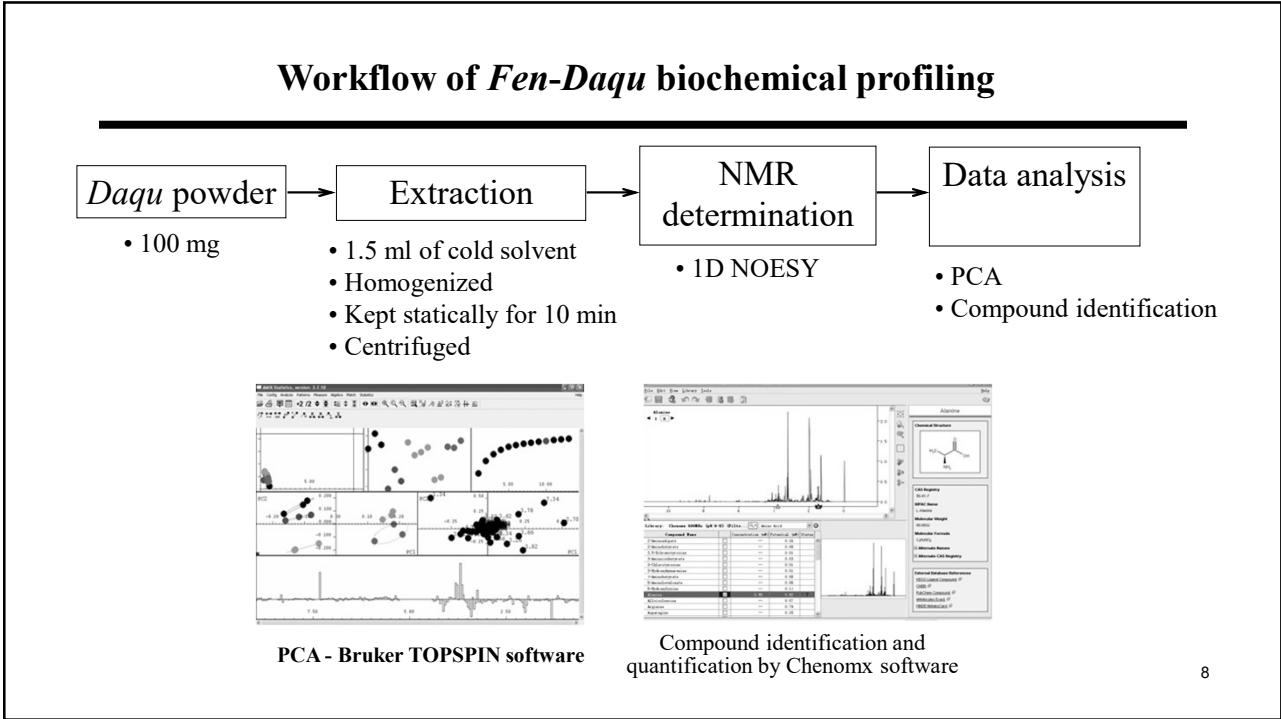


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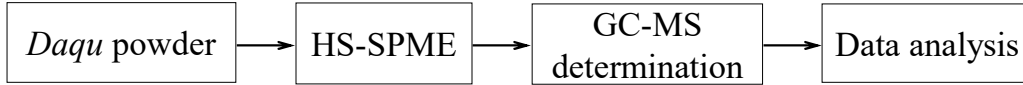


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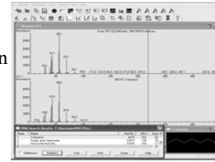


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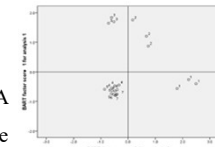
Workflow of *Fen-Daqu* volatile compounds profiling



Compounds Identification
MSD ChemStation software

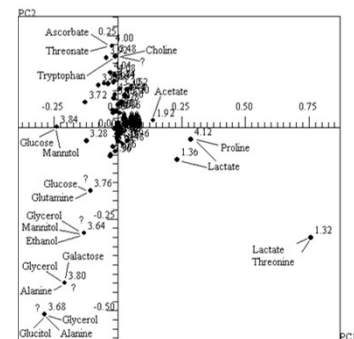
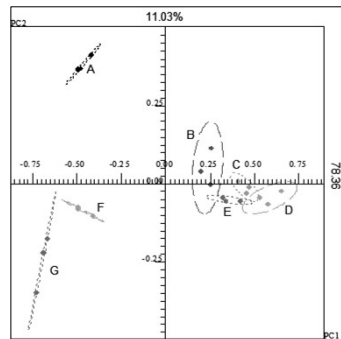
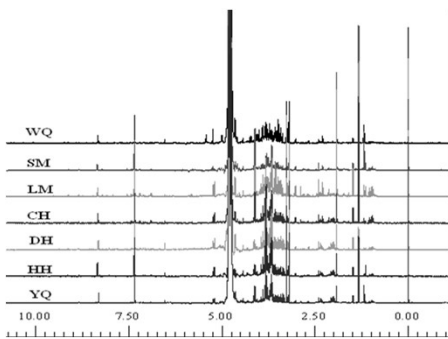


PCA



SPSS software

Fen-Daqu biochemical profiling



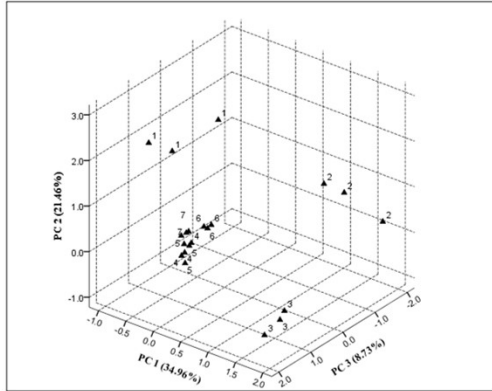
WQ: *Woqu*; SM: *Shangmei*; LM: *Liangmei*;
CH: *Chaohuo*; DH: *Dahuo*; HH: *Houhuo*; YQ: *Yangqu*.

Score plots of *Fen-Daqu*

Loading plots of *Fen Daqu*

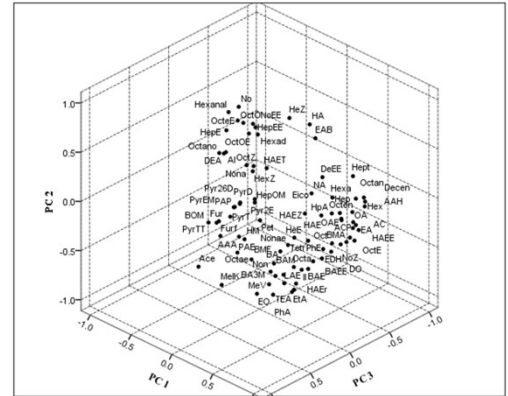
<https://doi.org/10.1002/j.2050-0416.2011.tb00499.x>

Fen-Daqu volatile compounds profiling



PCA score plot

- 1: *Woqu*; 2: *Shangmei*; 3: *Liangmei*
 4: *Chaohuo*; 5: *Dahuo*; 6: *Houhuo*;
 7: *Yangqu*.



PCA loading plot

<https://doi.org/10.1002/jib.8> 11

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Conclusion

These results could help *Daqu* producers to monitor the progress of the *Daqu* manufacturing process by measuring specific biomarkers for each step, and to verify the authenticity of commercially produced *Fen-Daqu*.

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Acknowledgement

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- Dr. Le Van Diep (Vinh University)
- Dr. Minoo (China Agricultural University)
- PhD. Candidate Xiao-Wei Zheng (Wageningen University)
- PhD. Candidate Zheng Yan (China Agricultural University)
- Master Kai Ma (China Agricultural University)

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Thank you!



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