



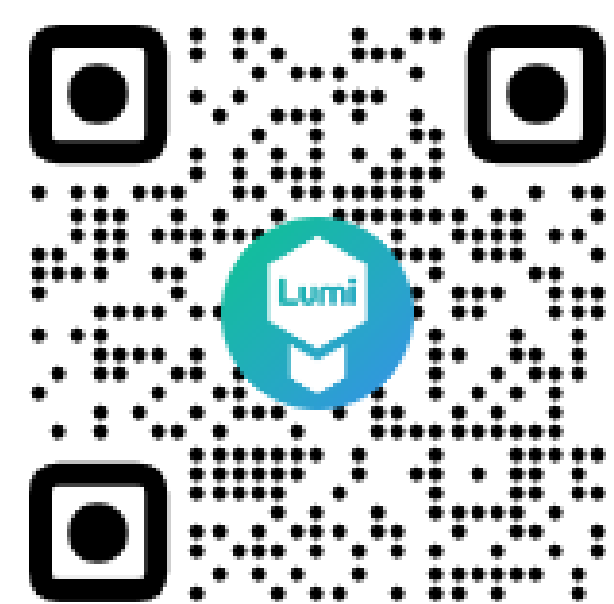
Use of conjugated linoleic acid (CLA) producing bacteria to develop sustainable goat milk product in Thailand



Watcharapong Naraballobh¹, Trisadee Khamlor¹, Akkasit Jongjareonrak²,
Sukhuntha Osiriphun², Kanyasiri Rakariyatham²

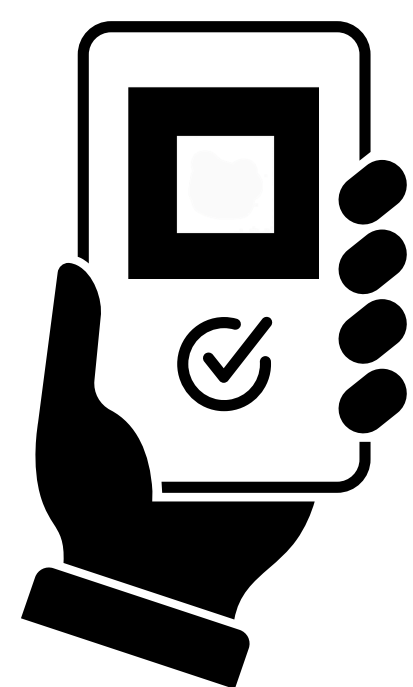
¹Chiang Mai University, Faculty of Agriculture, Thailand, ²Chiang Mai University, Faculty of Agro – Industry, Thailand

Let's **immersive** by scan here



Step 1

Scan and allow your camera

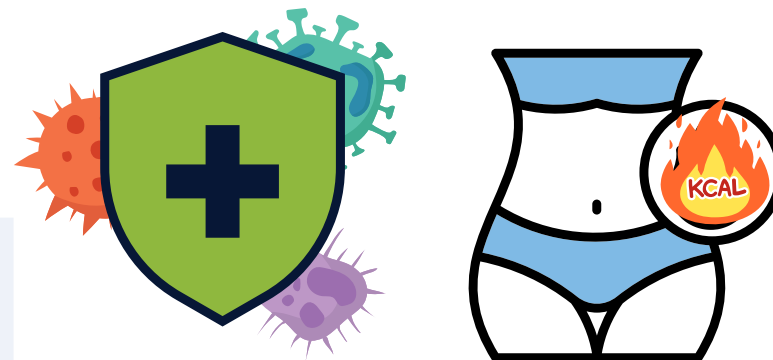


Step 2

Look for **bold square** symbol
then scan for content

Introduction

- Perception of goat milk and products is challenged in Thailand.
- Conjugated linoleic acid** ($C_{18}H_{32}O_2$) is a bioactive compound with beneficial health properties.
- CLA is biosynthesized by rumen bacteria and can be found in goat milk.

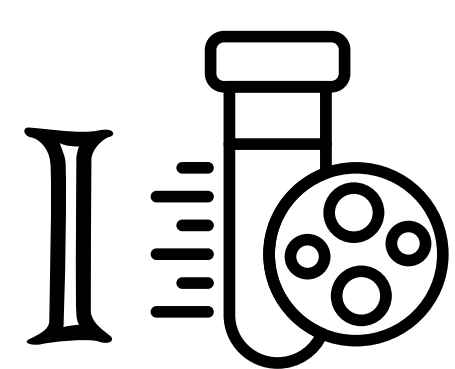


Objective: to determine optimal conditions and develop a sustainable high-CLA goat milk product

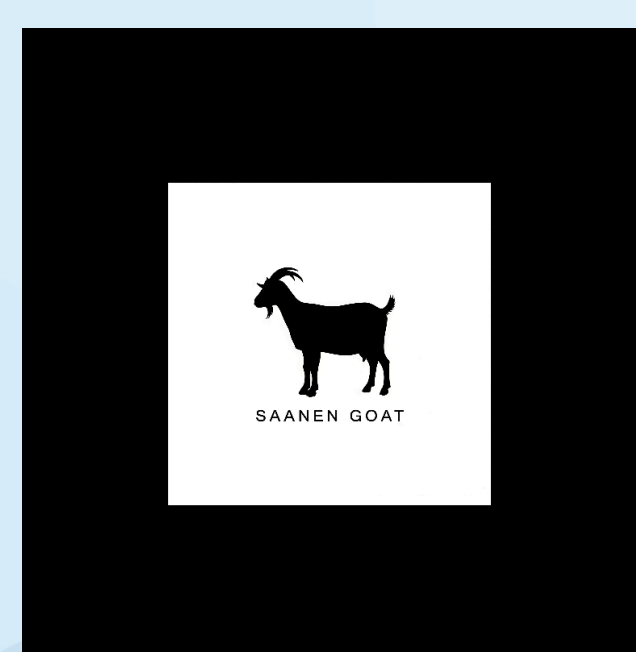
Material and Methodology

Production of inoculant by
CLA producing bacteria as
feed additive

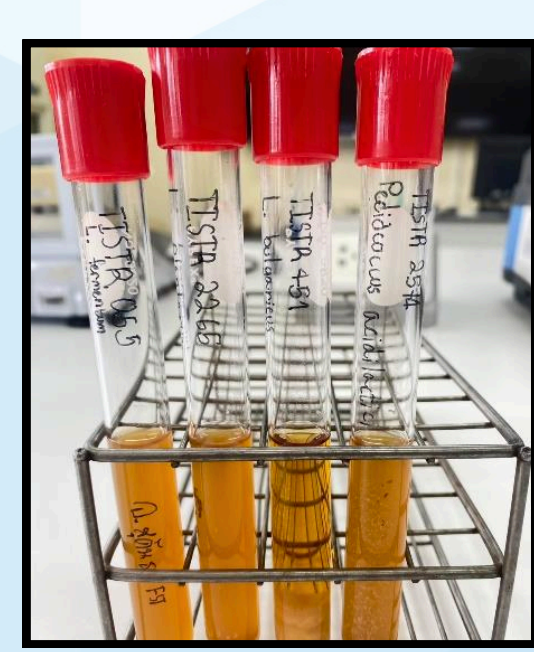
CLA-enriched goat milk production
by of CLA producing bacteria
supplementation



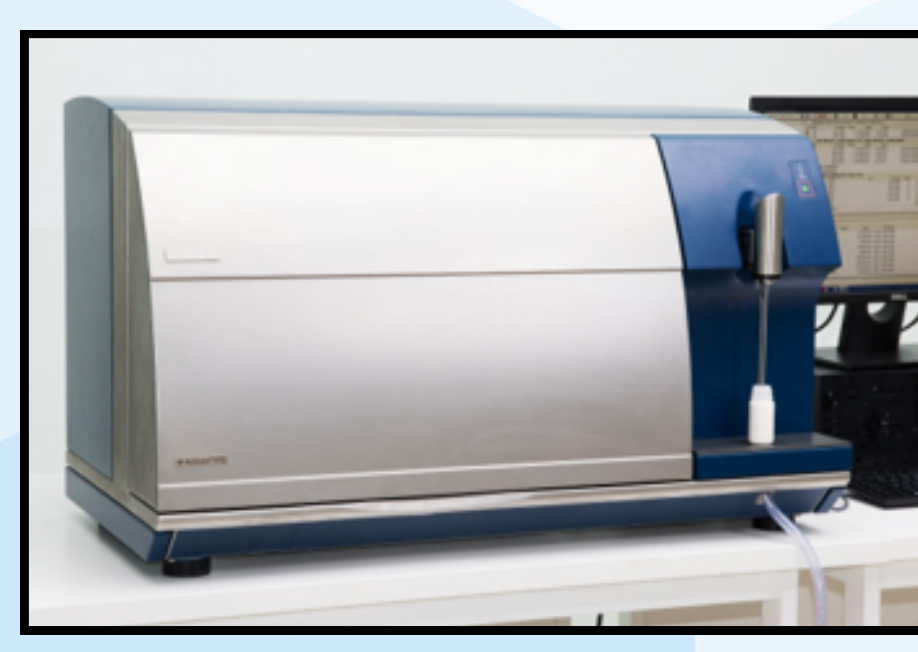
Use of CLA producing bacteria to
develop **sustainable goat milk product**



Collection of raw
goat milk samples



Preparation
of starter cultures



Testing of
optimal conditions



Product
development



Sensory and
shelf life evaluation



Knowledge
transfer

Acknowledgement

This research is funded by National Research Council of Thailand, Ministry of Higher Education, Science, Research and Innovation (Project ID 4638363).

Presented at Tropentag 2025 in Bonn

Results

The optimal condition:

1.0 : 0.5 : 0.5 : 10.0

L. plantarum *L. bulgaricus* *S. thermophilus* Pasteurize
TISTR 2265 TISTR 451 TISTR 894 goat milk

incubated at 44°C for 9 hours, yielded a high-CLA product containing 43.20 ± 1.59 to 51.47 ± 1.01 mg per 100g sample (**250-300% increase**), depending on milk fat content of 3 to 7% respectively.

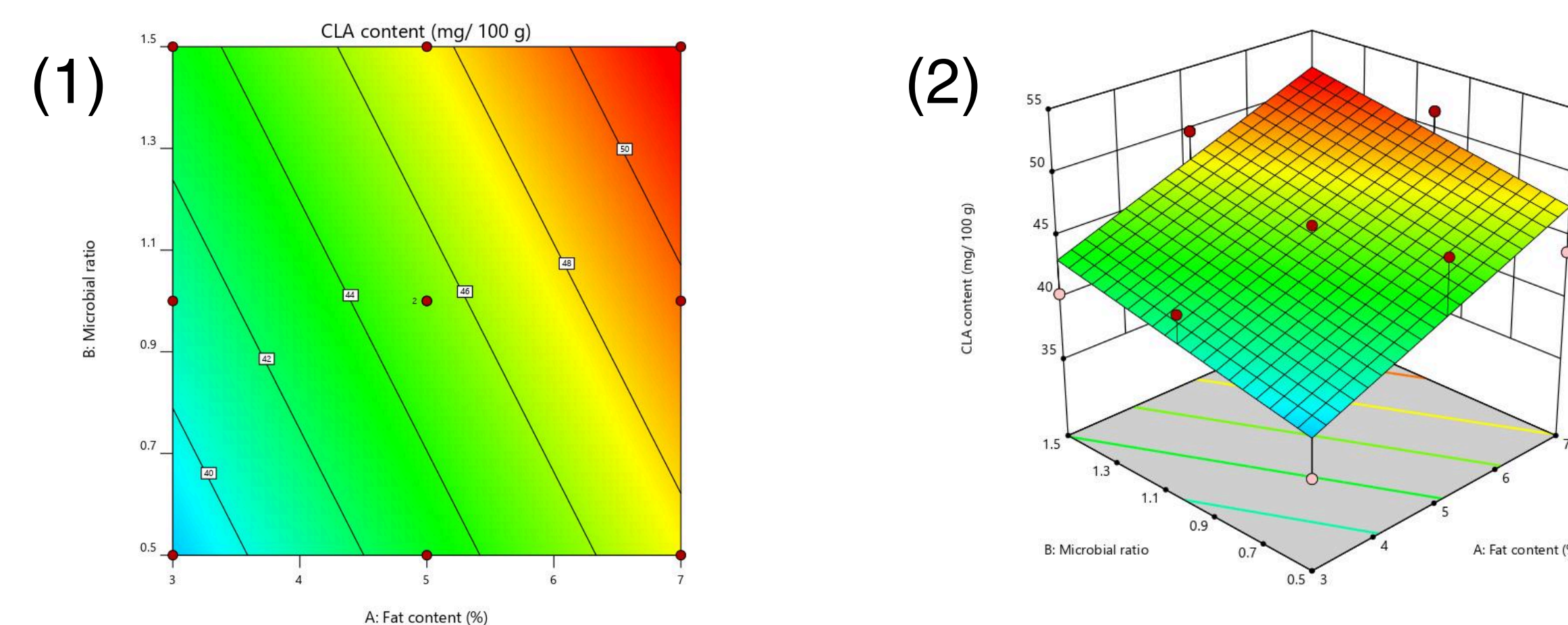


Fig.1-2: Response surface of equation describing the variation of fat content and starter ratio for optimal CLA production.

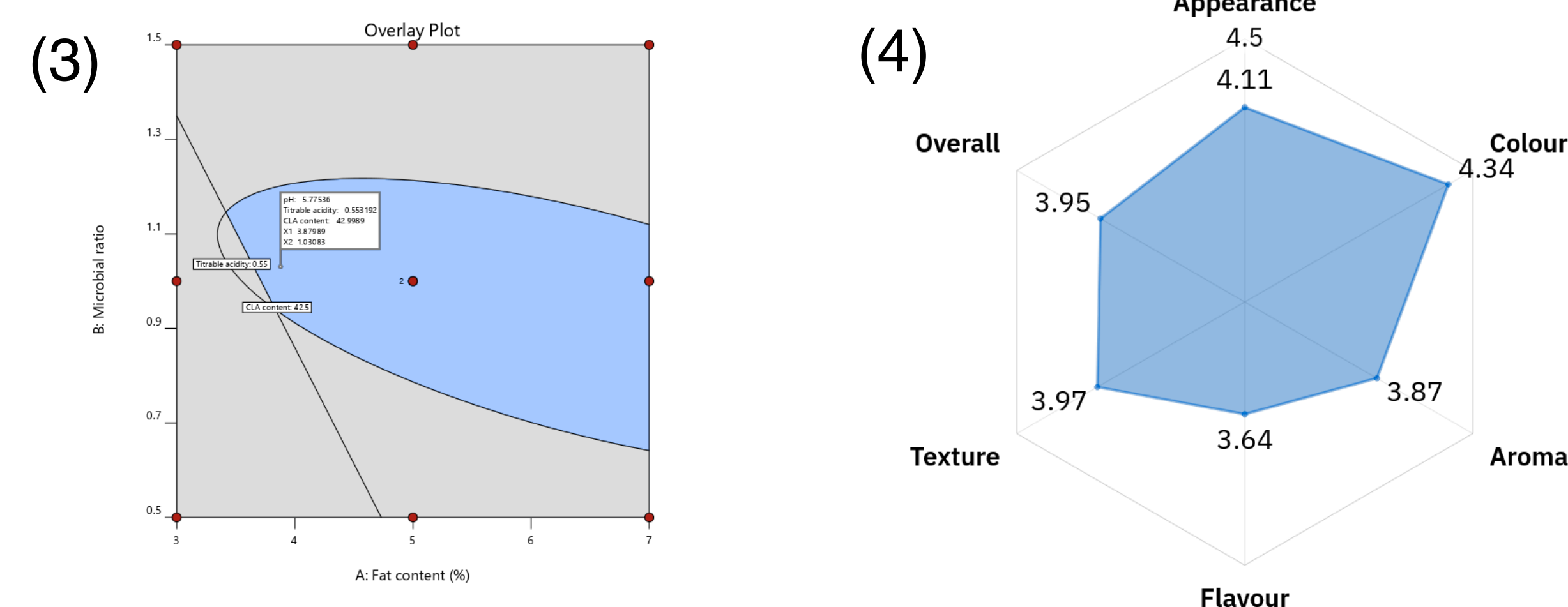


Fig. 3: Overlay plot area for optimal CLA production.

Fig. 4: Sensory evaluation on a 5-point hedonic scale.

Conclusion



High-CLA goat milk products can be applied to sustainable farming and industrial processing, creating a functional food, a unique identity, and goat milk product perception in Thailand.