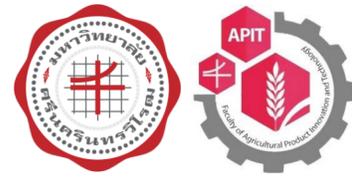


# Development of instant drink from pumpkin with puffed job's tears

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## Introduction

## Abstract

Pumpkin (*Cucurbita moschata* Decne.) is a common plant and cultivated throughout Thailand. Pumpkin is rich in antioxidants such as  $\beta$ -carotene, that helps to prevent cancer. This present study was to develop instant pumpkin beverage from pumpkin flakes using drum drying technique. Puffed job's tear seeds were added to add texture and nutritional values. Pumpkin flesh was mixed with wheat flour at 4, 7 and 10% and dried by drum dryer at 140 °C with rotational speed of 0.2 rpm. Pumpkin flakes prepared using tray drying at 70-80 °C were used as a control. Pumpkin flakes prepared with 10% wheat flour using drum drying exhibited higher sensory scores. However, it was found that adding puffed job's tear resulted in decreased sensorial scores.

- Pumpkin has high beta-carotene ( $\beta$ -carotene) and antioxidants.
- Antioxidants that help to prevent cancer.



- Puffed job's tear was added to add texture and nutrition.
- The amino acids are higher than those required by the WHO

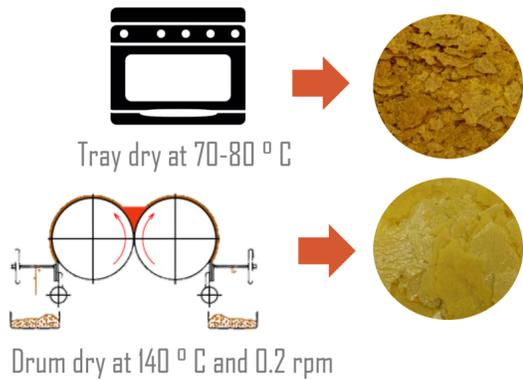
INSTANT DRINK FROM PUMPKIN WITH PUFFED JOB'S TEARS

## Materials and Methods

### Pumpkin flakes preparation



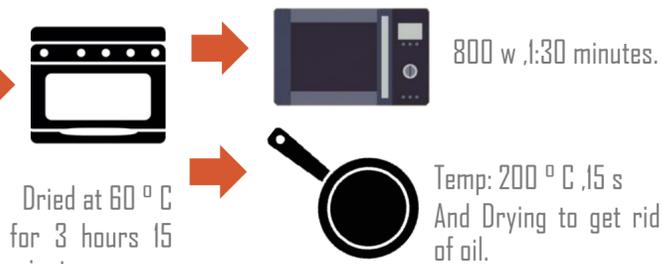
Boil in boiling water, mixed 1% NaCl in water for 4 minutes and blender.



### Puffed job's tears preparation



Soaked for 22 hours and boiled in the boiling water for 15 minutes.



### Methods



### Proximate analysis

- Moisture
- Crude fat
- Crude protein
- Crude fiber
- Ash
- Carbohydrate

### Sensory evaluation

#### Chemical quality

- Total phenolic determination
- DPPH scavenging
- Beta-carotene content

### Physical quality

- Moisture content
- Water activity
- Color
- Bulk density
- Rapid visco analyzer

## Conclusion

- The pumpkin flakes prepared using drum dryer showed higher chemical properties and sensory scores than the pumpkin flakes prepared using tray dryer.
- The best condition for production of the pumpkin flake was drum drying technique with addition of 10% wheat flours.
- Addition of puffed job's tear decreased sensory scores and chemical properties of the instant pumpkin drink.

## Results and Discussion

As shown in Fig.1 the moisture content and water activity of pumpkin prepared with drum dryer with addition of 10% wheat flour were significantly lower than other samples.

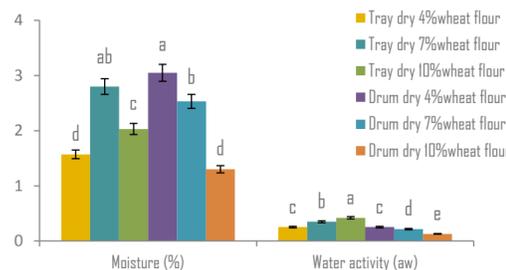


Fig.1 Moisture content and Water activity of Pumpkin flakes

The Antioxidant activity and Beta-carotene content of all pumpkin flakes were slightly different but the total phenolic compounds of all pumpkin flakes prepared using drum dryer were higher than pumpkin flakes prepared using tray dryer as shown in Fig.2.

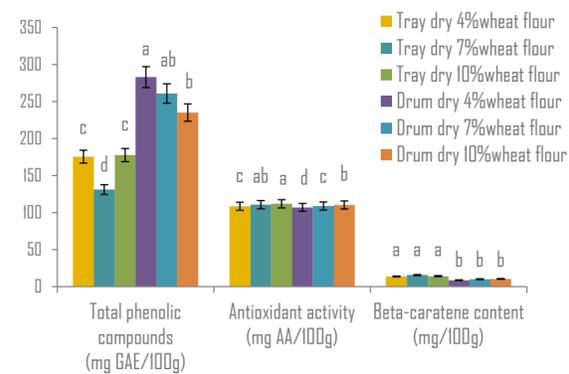


Fig.2 Phytochemical content of Pumpkin flakes

As shown in Fig.3, pumpkin flakes prepared with drum dryer showed higher sensory scores than the pumpkin flakes prepared with tray dryer on all aspects. And the pumpkin flakes by drum dryer with 10% wheat flour had no significantly difference with the pumpkin flakes by drum dryer with addition of 4% wheat flour.

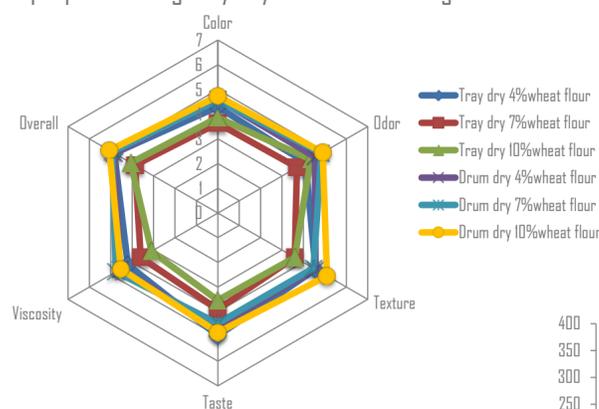


Fig.3 Sensory evaluation of Pumpkin flakes

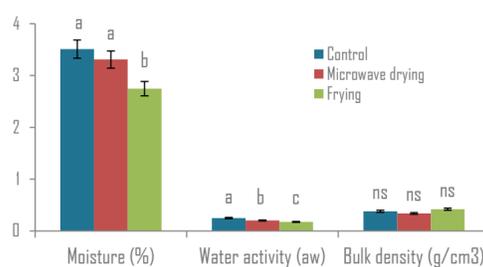


Fig.4 Physical properties of Instant pumpkin drink with puffed job's tear products.

Pumpkin flakes prepared by drum dryer with 10% wheat flour were mixed with skim milk and other ingredients with added puffed job's tear. The Total phenolic compound of control sample non added puffed job's tear shown the higher than the sample with microwave puffed job's tears and frying puffed job's tears as shown in Fig. 5.

The control sample non added puffed job's tear showed higher sensory score than the sample with microwave puffed job's tears and frying puffed job's tears.

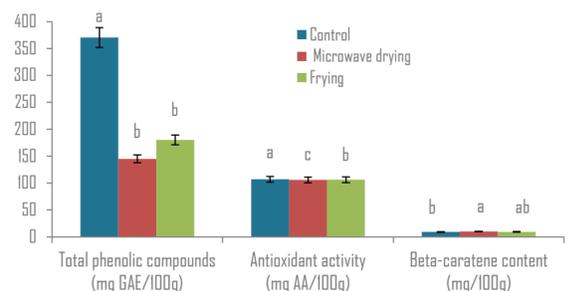


Fig.5 Phytochemical content of Instant pumpkin drink with puffed job's tear products.

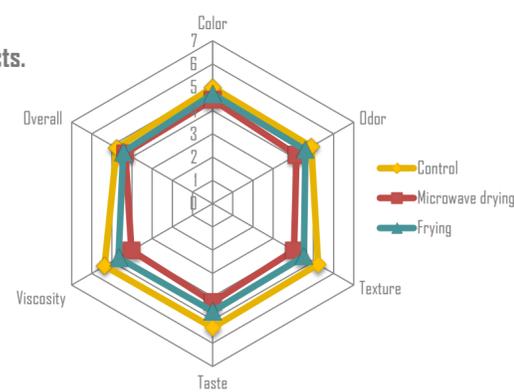


Fig.6 Sensory evaluation of Instant pumpkin drink with puffed job's tear products.

The microwave puffed job's tears and frying puffed job's tears have unique smell and taste of cooked job's tears impaired the sweetness of pumpkin flake, thus resulted in a decrease of the sensory score of samples as appeared on Fig.6.

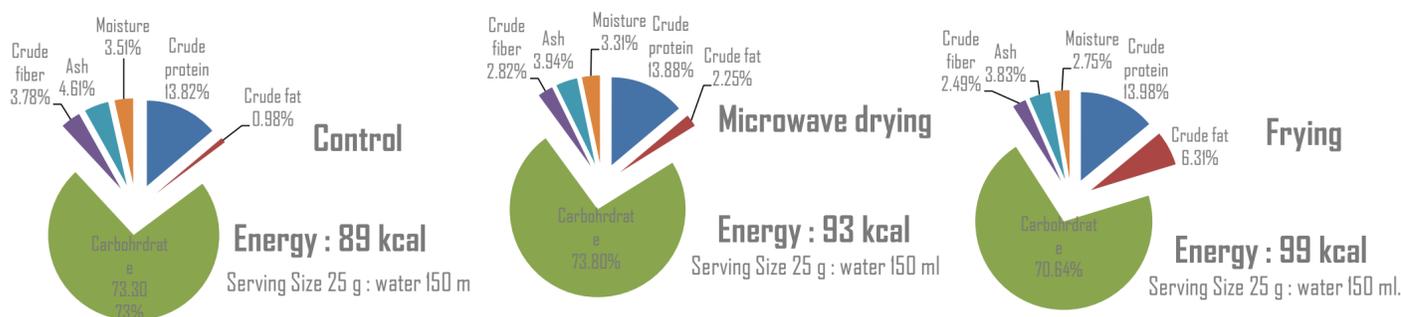


Fig.7 Nutrition values of Instant pumpkin drink with puffed job's tear products.