

**F**inancially independent and with a high level of food sophistication, Chinese urbanites are willing to pay a premium for healthy foods and drinks. Plant protein beverage is one of the health drinks in China. This plant protein beverage contains beans and nuts. It is rich in protein and essential nutrients, minerals and *etc.* Compared with animal protein beverage which predominantly contains milk, plant protein beverage has higher unsaturated fatty acid and lower cholesterol. It has a positive health benefit in preventing vascular sclerosis and diabetes (Cao, 2009).

Plant protein beverage requires some amount of vegetable oil to the stability of the product. MPOB has developed a palm-based protein beverage. Palm-based formulation will reduce the production cost and also increase the shelf life of the plant protein beverage.

## TECHNOLOGY OFFERED

The technology offered is palm-based plant protein beverage formulation. The formulation is developed using palm olein.

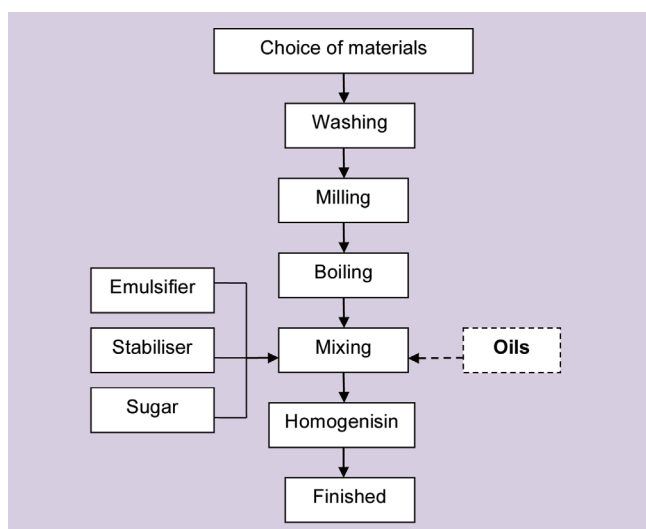


Figure 1. Process flow of palm-based plant protein beverage.

## PROCESSING

The process flow of palm-based plant protein beverage is show in *Figure 1*.

## PRODUCT CHARACTERISTICS

Sensory evaluation showed no significant difference between palm-based soya milk (PBSM) and the commercial product. Similarly, palm-based walnut beverage (PBWB) also showed no significant difference than that of the commercial samples, Yili and Liugehetao.

## NOVELTY

Palm-based soya milk and walnut beverage.



Palm-based soya milk



Palm-based walnut beverage

## BENEFITS

- Cost effective ingredient.
- Enhanced the sensory and flavour of soya milk.

## MARKET POTENTIAL

Plant protein beverage had approximately 18.69% of the overall China's beverage market share in 2016 and the share is expected to reach 24.2% in 2020 (China Leading Institute of Industry Research, 2017).

TABLE 1. ESTIMATED EXPENDITURE AND ECONOMIC VALUES

Item	Value
Capital asset	RMB 4 460 000 (RM 2 738 675.13)
Discounted benefit to cost ratio	1:1.02
Discounted payback period, (yr)	3
Internal rate of return (IRR),%	52.98
Net present value (NPV) @ 10%	RMB 4 889 936 (RM 3 003 128.42)
Return on investment (ROI),%	60

### ECONOMIC EVALUATION

The investment required for the production of plant protein beverage is financially feasible as shown in *Table 1*. The estimated total investment is RMB 27 533 330 (RM 16 908 891) with a capital expenditure of approximately RMB 4 460 000 (RM 2 738 675.13). The parameters shown are evaluated based on the price of plant protein beverage at RMB 7 kg<sup>-1</sup>. The investment will generate an average income of RMB 47 500 000 (RM 29 168 361.57) every year.

### CONCLUSION

Palm olein can replace soyabean oil and walnut oil in the manufacturing of plant protein beverage, and thus reducing the cost of production as well as improving the stability of plant protein beverage.

### REFERENCES

- Cao Xiaohong (2009). Study on the stability and the stability prediction model of plant protein beverages. *Tianjin Science and Technology University*.
- China Leading Institute of Industry Research, 2017. [www.qianzhan.com/analyst/detail/220/170306-a8b8ad30.html](http://www.qianzhan.com/analyst/detail/220/170306-a8b8ad30.html), accessed on 6 February 2018.

For more information, kindly contact:

Head of Corporate Implementation  
and Consultancy Unit, MPOB  
6, Persiaran Institusi,  
Bandar Baru Bangi,  
43000 Kajang, Selangor, Malaysia  
Tel: 03-8769 4574  
Fax: 03-8926 1337  
E-mail: tot@mpob.gov.my  
[www.mpob.gov.my](http://www.mpob.gov.my)