



# Quality Improvement and Market Diversification of Honey Bee and Herbal Based Products in Herbal Propolis Mouthwash

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## ABSTRACT

In the 2023 Kedaireka matching fund grant activity with the title pimproving the quality and market diversification of honey bee and herbal based products Scheme Downstreaming innovation from research results for commercialization purposes, innovation has been carried out in the production of herbal propolis mouthwash. In the herbal propolis mouthwash innovation, a formula was combined on the function of propolis and the results of betel leaf extraction for a non-alcoholic mouthwash formula. The prototype of this mouthwash has received a distribution permit from BPOM NA with number NA 18231400102 using the Prolizama brand. This activity is a collaboration between Universitas Muhammadiyah Jakarta and partner CV Madu Apiari Mutiara in Depok, West Java, Indonesia. In this activity, the activities carried out include making prototypes, testing, packaging design, processing BPOM NA distribution permit certification, limited scale production, optimizing online marketing via the website and making a business plan for the UMJ and CV Madu Apiari Mutiara agreement, Madu Apiari Mutiara. Innovation Herbal propolis mouthwash with natural composition, high antioxidant and anti-inflammatory in combination with propolis and betel herbs. In achieving a price competitive product, it is hoped that it will be a substitute for propolis mouthwash imported from Japan without expensive herbs. This formula is being patented. The production of herbal propolis mouthwash is expected to increase partner income. In the implementation of independent learning, the MKBM independent campus is the fulfillment of IKU 2, Students Gain Experience Outside Campus, IKU 3, namely Lecturers Doing Activities Outside Campus and IKU 5, Lecturers' Work Results are Used by the Community. The Depok City Regional Government and the community will have superior products, herbal jelly candy and herbal propolis mouthwash that are healthy and halal. A significant impact for UMJ is an increase in the entrepreneurial atmosphere for lecturers and students.

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## INTRODUCTION

In the 2023 Maching Fund Kedaireka grant activity with the titlepimproving the quality and market diversification of honey bee and herbal based products has collaborated with Universitas

Muhammadiyah Jakarta (UMJ) with CV. Madu Apiari Mutiara in downstream research and product commercialization in Scheme A1 [1].Mouthwash is a dilute concentration of antibacterial solution used to fight oral microbes, fight oral infections, cleanser, to remove fresh breath odor and antiseptic. Mouthwash plays an important role in an individual's oral hygiene, mouthwash helps to relieve the symptoms of gingivitis, inflamed gums

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and can also be relied on to destroy pathogenic bacteria [2,3].

There is already market demand for herbal propolis mouthwash as a superior product in Depok City and the Muslim market network and Transmart. Human resources at CV Madu Apiari Mutiara only number 20 people and require collaboration support with partner universities. In developing propolis and honey products, it is necessary to develop a healthy, natural, halal, herbal propolis (betel leaf) mouthwash. Currently there are imported Japanese competitor products which are expensive and for domestic products only propolis mouthwash which has not been combined with herbal extracts. In terms of market development, it is necessary to create an online e-commerce marketing website which is currently still based on offline stores.

The advantage of the activity is the link between innovation and the track record of the proposer and partners since the last 5 years and UMJ and partners have had an MOU and implementation in the field of HR in the development of research and development, graduates to meet company needs, facilities and means for introducing companies and products in the environment Universities and surrounding communities, research places for UMJ students and lecturers, places for practical work or internships for UMJ students, places for internships for UMJ lecturers, places for industrial visits for UMJ students and lecturers, places for community service activities for UMJ lecturers and students. The innovation of herbal propolis mouthwash and the preparation of a business plan are the proponent's track record which is utilized and collaborated with partners.

The benefits for UMJ are the implementation of IKU 2, IKU 3 and IKU 5, implementation of collaboration with partners. For partners to solve problems and solutions, we have a superior product, natural halal herbal propolis mouthwash which will increase profits and markets. This program provides benefits for the Depok City Regional Government by having a product showcase as a superior product for SMEs and can become a typical souvenir of Depok City [8].

## METHOD

The method used is to complete the following activities:

1. (Activity 1) Making a prototype of herbal propolis mouthwash.
2. (Activity 2) Prototype testing for certification. Testing of herbal propolis mouthwash includes composition,

organoleptic tests, pH, water content, Total Plate Number (ALT). Number of Yeast Molds (AKK), *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Candida albicans*, toxicity test, anti-inflammatory test [4].

3. (Activity 3) Design packaging for herbal propolis mouthwash products
4. (Activity 4) Arrangement of BPOM (NA) and halal certification for herbal propolis mouthwash with the existing Prolizama brand (brand upgrade) to obtain distribution permits and certification,
5. (Activity 5) Limited scale production for market trials in Depok and Collaboration with the Regional Government of Depok City as a superior product, finalizing products and prototypes for certification and ready to be marketed
6. (Activity 6) Registration of IPR Patents for product formulas with registered targets.
7. (Activity 7) Making a business plan (7 aspects, namely technological technical aspects, production aspects, market aspects, HR aspects, financial feasibility aspects, social humanities aspects, agreed business aspects in product commercialization
8. (Activity 8) Creation of a product marketing website with human resources from partners and the proposing team (7 lecturers and 30 students) which is integrated with e-commerce in the online market and Optimization of creative and educational promotional/marketing content on social media (eg. Instagram, Facebook, TikTok, YouTube) for product marketing and creating news for online mass media such as Republika online.

The activity stages are presented in the following **Figure 1**.

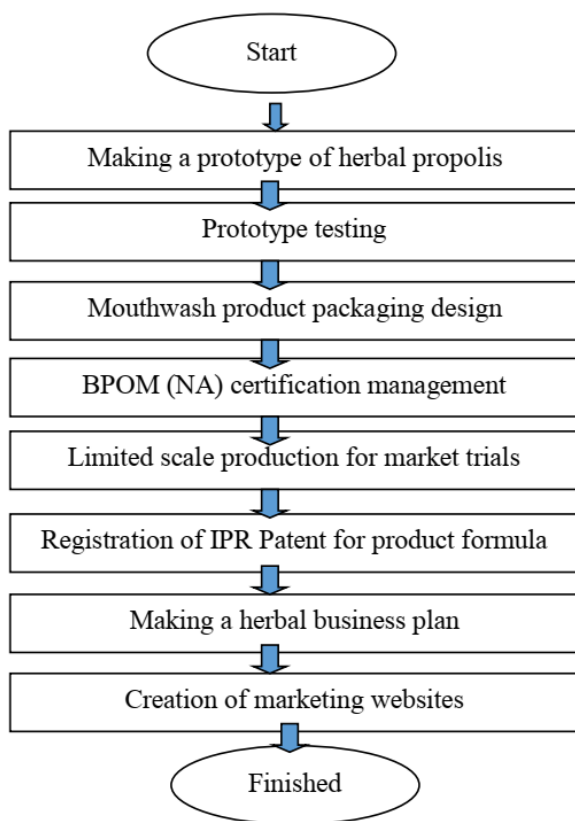


Figure 1. Activity Completion Method

## RESULTS AND DISCUSSION

### Results of prototype creation activities

The prototype herbal propolis mouthwash includes the following Table 1.

Table 1. Formula raw materials

No	Name
1	Purified Water
2	Betel Leaf Extract
3	PEG-40 Hydrogenated Castor Oil
4	Propolis Extract
5	Peppermint
6	Propylene Glycol
7	Sucrose
8	Sodium Benzoate
9	BHT
10	Sodium Fluoride

Prototyping process:

1. Prepare all ingredients according to the formula
2. Separate the Solid Phase from the Liquid Phase
3. Heat the solid phase dissolved in Purified Water pH 8 for 10 minutes
4. Mix the Liquid Phase and Solid Phase. Homogenize on a Hotplate

5. Make sure all ingredients are homogeneous then add purified water pH \* to 250 mL
6. Cool to room temperature
7. Store in a white PDE bottle with a lid.
8. Prototype testing

### Results of testing activities

The test results at the Bogor GIS Laboratory are as follows Table 2.

Table 2. Test Results for Prolizama Herbal Propolis Mouthwash

No	Parameter	Unit	Result	Limit Of Detection	Method
1	Asam Benzoat	mg / L	17865.07	-	18-5-88/MU/SMM-SIG (HPLC-PDA)
2	Angka Lempeng Total (ALT)	colony / mL	<10	-	USP 43 NF 38 Tahun 2020
3	Candida Albicans	/ 0.1 mL	Negative	-	USP 43 NF 38 Tahun 2020
4	Pseudomonas Aeruginosa	/ 0.1 mL	Negative	-	USP 43 NF 38 Tahun 2020
5	Staphylococcus Aureus	/ 0.1 mL	Negative	-	USP 43 NF 38 Tahun 2020
6	Arsen (As)	mg / L	Not detected	0.008	18-13-8/MU/SMM-SIG (ICP OES)
7	Kadmium (Cd)	mg / L	Not detected	0.00011	18-13-8/MU/SMM-SIG (ICP OES)
8	Mercuri (Hg)	mg / L	Not detected	0.004	18-13-8/MU/SMM-SIG (ICP OES)
9	Timbal (Pb)	mg / L	Not detected	0.009	18-13-8/MU/SMM-SIG (ICP OES)
10	Kapang Khamir	colony / mL	<10	-	USP 43 NF 38 Tahun 2020

### Results of packaging design activities



Figure 2. Packaging prototype design

### Results of BPOM NA management activities

BPOM NA management activities have been published from BPOM RI [7] as follows.



Figure 3. BPOM NA Certificate [7]

### Results of limited scale production activities

On a limited scale, it is produced according to a prototype that has received a BPOM NA certificate



**Figure 4.** Limited Scale Production

### Results of IPR activity Formula patents

Patent IPR registration has been registered with the Ministry of Law and Human Rights.

### Results of business plan creation activities

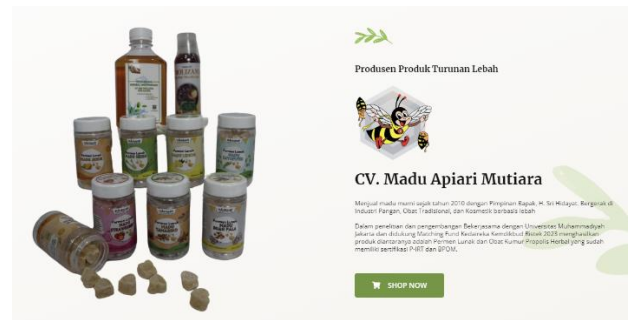
The results of the business plan are as follows: In this business plan, a feasibility analysis has been carried out on Technical and Production Aspects, Market and Marketing Aspects, Management and Organizational Aspects, Financial Aspects and Environmental and Social Aspects providing feasible conclusions with the results of the financial and sensitivity analysis as follows **Table 3**.

**Table 3.** Results of Business Plan Feasibility Analysis

	IDR 3,336,743,642
<b>NPV DF 20 %</b>	
	35.04%
<b>IRR</b>	
	1.84
<b>B/C ratio</b>	
<b>Pay Back Period</b>	0.67 years
<b>BEP</b>	45.35%

### Results of marketing website creation activities

Partner marketing website on <https://madumutiara.co.id/> with the following display.



**Figure 5.** Display of madu mutiara marketing website, <https://madumutiara.co.id/> [5]

## CONCLUSION

Based on the results of the Kedaireka Matching Fund activities, it can be concluded as follows:

1. The target prototype of the Prolizama brand herbal propolis mouthwash product has received a distribution permit certificate from BPOM NA and is ready to be marketed offline and online.
2. In this business plan, a feasibility analysis has been carried out on Technical and Production Aspects, Market and Marketing Aspects, Management and Organizational Aspects, Financial Aspects and Environmental and Social Aspects to provide feasible conclusions. In the business plan collaboration, it was agreed that the partners would produce and market with a royalty of 5% of the estimated production price for UMJ.
3. Partner marketing website on <https://madumutiara.co.id/>.

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