

Preliminary Exploration of Traditional Medicine Formulas as A Basis of Effort and Support Toward Traditional Medicines Developing Use and Implementation in The Government Healthcare Program

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ABSTRACT

Introduction: Develop the healthy living communities with enhance ability of community in using herbs or traditional medicine in the family health system was supported by the government regulations. **Materials and Method:** The study only took point 3 out of 10 points Essential Public Health Services. The point was to inform and educate the public about health, the factors that influence it, and efforts to improve it. This point was realized by collecting and selecting the formulas that have been published by the government to be summarized based on the indication of disease, quantity of herbs and water (including the parts of herb), processing of formulation and drinking rules, etc. **Results:** 17 Formulations of traditional medicinal herbs are valuable for the indication of diseases: arthritis, reduce blood fat /blood cholesterol, reduce blood glucose, reduce body weight, maintaining the health conditions of cancer patient, cough, diabetes mellitus, gastritis, gout, hemorrhoids, reduce high blood pressure, liver problem, nausea and vomiting, uric acid, increase urine volumes, urinary stone/kidney stone, and physical fitness. **Conclusion:** The formulas could be used and was introduced to the community for encouraging health literacy, empowering the community to build a family health system. Finally, the exploration of traditional medicine formulas could support the developing use and implementation of traditional medicines in the Government Healthcare Program.

Key words: Traditional medicine, Traditional medicine formulations, Healthy living communities.

INTRODUCTION

Public health factor is a concern of the government; many programs have been carried out to make the public health program successful. Therefore, development in the health sector is very important, especially in villages.¹

To realize a healthy community, the government issued several regulations and government actions, among others the Healthy Living Community Program (Germas),² Healthy Village House (Rumah Desa Sehat/RDS),¹ and the regulations that related with *Jamu* and traditional herb medicine, including herbal medicine scientification,³ and Fit with *Jamu* (Bude *Jamu*).⁴

Healthy Living Community Program is directed as prioritizing efforts to increase disease prevention (preventive) and increase health promotion (promotive).² However, it is not ruled out about efforts to improve public health status which include disease treatment (curative) and health restoration (rehabilitative).³

Indonesia has a wealth of medicinal plants and herbs formulation from various ethnic groups that live throughout Indonesia. Based on data from Research on Medicinal Plants and *Jamu* (RISTOJA) by the Indonesian Ministry of Health in 2012, 2015 and 2017, there were 32,013 traditional medicinal herbs and 2,848 plant species that had been identified as traditional medicinal plants.⁵

Traditional herb medicine is called *Jamu* which is used based on local wisdom for generations. These empirical uses from the data is the basis for proving the safety and efficacy of the uses of *Jamu* formulation for generations in Indonesia.⁵

Basic Health Research published in 2018 reported that many people still used herbs to control their diseases, for instance diabetes mellitus, in National scale 14,5% used traditional medicine.⁶

Based on the regulations above, and for the success of the healthy community program, as well as utilizing the wealth of medicinal plants, traditional medicine formulations can be utilized, especially in efforts to increase disease prevention (preventive) and improve health promotion (promotive) in rural areas. Therefore, a study of traditional medicinal formulations was carried out which provides clarity on the weight of ingredients, formulation processing, and drinking rules.

MATERIALS AND METHODS

The 10 Essential Public Health Services, Formulary of Indonesian Traditional Medicine Concoction that have been published by the government, and the Saintification Formulary that have been published by Center for Research and Development of Medicinal Plants and Traditional Medicine (B2P2TOOT) Health Research and Development Agency (Balitbangkes) Ministry of Health.

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Based on the 10 Essential Public Health Services, point number 3 could be applied to this study by aligning with government programs.⁷

The point number 3 is suitable to inform and educate the public about health, the factors that influence it, and how to improve it. To realize this point, in next step, explore traditional medicinal recipes that have been used in several regions in the Indonesian Formulary Books, and traditional medicinal recipes that have been scientifically researched by the Hortus Medicus Jamu Research House.

RESULT

Exploring traditional medicine formulas

The results of exploring traditional medicine formulas are as follows:

The type of formulations chosen is one that has units of weight in grams.

Formulary of Indonesian traditional medicine concoction vol. 1, 1st edition in 2011⁸ showed the formulation as follows. (Table 1)

Formulary of Indonesian traditional medicine concoction 1st edition in 2011 gave the solution for several diseases among others the formula to reduce blood fat, help to relieve diabetes, and dissolve kidney stone.

Formulary of Indonesian original herbal ethnomedicine concoction 2nd edition in 2012⁹ showed the formulation as follows. (Table 2)

Formulary of Indonesian original herbal ethnomedicine concoction 2nd edition in 2012 gave the solution for several diseases among others the formula for cough and helps relieve hemorrhoids.

Formulary of Indonesian original herbal ethnomedicine concoction 3rd edition in 2013¹⁰ showed the formulation as follows. (Table 3)

Formulary of Indonesian original herbal ethnomedicine concoction 3rd edition in 2012 gave the solution of several diseases among others the formula to relieve liver problem, maintain the health conditions of cancer patients, and reduce high blood pressure.

Indonesian Traditional Medicinal Formulary (FROTI) in 2017¹¹ showed a single formulation as follows. (Table 4)

Indonesian Traditional Medicinal Formulary (FROTI) in 2017 gave the solution for several diseases among others the formula for cough, gout, increased stamina, nausea and vomiting, hemorrhoids, increased urine volumes, urinary stone and diabetes mellitus.

Formularies of traditional Indonesian medicinal herbs that were resulted based on the scientific study in Center for Research and Development

Table 1: Formulation of traditional medicinal herbs and the indication of diseases.⁸

Indication of disease	Formulation number	Composition of Herbs and water	Quantity (g) for once processing	Processing of formulation and drinking rules
Reduce blood fat	1	<i>Syzygium polyanthum</i> (Wight) Walp. –leaves	10	Made a decoction. The herb is boiled with 400 ml of water until it becomes 150 ml. The decoction was taken at once before going to bed at night.
		<i>Imperata cylindrica</i> L. – roots	10	
	<i>Centella asiatica</i> L. – leaves	10		
	<i>Andrographis paniculata</i> (Burm. F) Ness. – leaves	10		
	water	400 ml		
Help to relieve Diabetes mellitus	2	<i>Ipomoea batatas</i> (L.) Lam. –fresh leaves	200	The herb is boiled with 600 ml of water to be 300 ml. It is taken twice a day until healed.
		<i>Gynura procumbens</i> (Lour.) Merr. –fresh leaves	100	
	water	600 ml		
Help to dissolve kidney stone	1	dried <i>Phyllanthus niruri</i> L. – herb	100	The herb is boiled with 1200 ml of water until it becomes 600 ml. It is taken three times a day 200 ml.
		water	1200 ml	
Help to dissolve kidney stone	1	<i>Orthosiphon aristatus</i> (Blume) Miq. – leaves	20	The herb is boiled with 600 ml of water until it becomes 200 ml. The decoction is taken twice a day for 8 weeks.
		<i>Centela asiatica</i> L. – herb	20	
		<i>Imperata cylindrica</i> (L.) P.Beauv. – roots	20	
		<i>Helianthus annuus</i> L. stem	10	
		<i>Andrographis paniculata</i> L. Ness – leaves	20	
water	600 ml			

Table 2: Formulation of traditional medicinal herbs and the indication of diseases.⁹

Indication of disease	Formulation number	Composition of Herbs and water	Quantity (g) for once processing	Processing of formulation and drinking rules
Cough	1	<i>Zingiber officinale</i> Roscoe.–rhizome	10	The ingredients are pounded, 200 ml warm water is added. It is taken once a day 200 ml.
		Water	200 ml	
	2	<i>Physalis angulata</i> Linn. – leaves	10	The ingredients are boiled with 400 ml of water to 200 ml. It is taken three times a day 200ml.
		Water	400 ml	
	3	<i>Zingiber officinale</i> Roscoe. – rhizome	10	The ingredients are boiled with 800 ml of water to 600 ml, then filtered. It is drunk three times a day 200 ml while warm.
		<i>Kaempferia galanga</i> Linn – rhizome	10	
Red sugar		sufficiently		
Help to relieve hemorrhoids	1	<i>Clerodendrum japonicum</i> [Thunb.] Sweet. – floss	20	The ingredients are boiled with 400 ml of water to 200 ml and then filtered. It is taken twice a day 100 ml.
		<i>Aloe vera</i> Linn – leaves	60	
	2	water	400 ml	The ingredients are boiled with 400 ml of water to 200 ml, and it is filtered. It is taken once a day 200 ml until healed.
		<i>Graptophyllum pictum</i> Griff. – fresh folium	10	
water	400 ml			

Table 3: Formulation of traditional medicinal herbs and the indication of diseases.¹⁰

Indication of disease	Formulation number	Composition of Herbs and water	Quantity (g) for once processing	Processing of formulation and drinking rules
Relieve liver problem	1	<i>Acanthus ilicifolius</i> L. –stem	100	The ingredients are pounded and boiled with 1500 ml to 1000 ml. It is taken twice a day 400 ml in the morning and evening.
		<i>Phyllanthus niruri</i> L. – herbs	400	
		<i>Curcuma xanthorrhiza</i> Roxb. – rhizome	100	
		Water	1.5 l	
		<i>Vitex pinnata</i> L. –cortex)	5	
Maintain the health conditions of cancer patients	1	<i>Ctenolophon parvifolius</i> Oliver, Trans. Linn. Soc. – cortex	10	All ingredients are boiled with 400 ml of water until it becomes 200 ml. Concoction is taken twice a day of each 100 ml in lukewarm.
		<i>Hedyotis corymbosa</i> L. Lamk. – herb	2	
		<i>Azadirachta indica</i> Juss. – folium	2	
		<i>Phaleria macrocarpa</i> [Scheff] Boerl. – fructus	4	
		<i>Pterocarpus indicus</i> Willd – cortex	10	
Reduce high blood pressure	1	Celery (<i>Apium graveolens</i> L.) – leaves	50	The ingredients are boiled in 1000 ml of water until it boils briefly and is immediately removed. It is taken 3-4 times a day 200 ml / 3 hours once a drink.
		Garlic (<i>Allium sativum</i> L.) – bulb	50	
		<i>Centella asiatica</i> L. – herbs	50	

Table 4: Formulation of traditional medicinal herbs and the indication of diseases.¹¹

Indication of disease	Formulation and the parts of the plant used	Quantity (g) for once processing	Processing of formulation and drinking rules
Cough	<i>Thymus vulgaris</i> (L) – herbs	20	The ingredients are boiled with 400 ml of water until it becomes 200 ml. It is then cooled, filtered and drunk all at once. It is drunk four times a day.
	<i>Glycyrrhiza glabra</i> Linn. – roots	10	The ingredients are boiled with 600 ml of water until it becomes 200 ml. It is then cooled, filtered and drunk all at once. It is drunk once per day.
	<i>Abrus precatorius</i> L. – leaves	5	The ingredients are boiled with 400 ml of water until it becomes 200 ml. It is then cooled, filtered and drunk all at once. It is taken three times a day.
Gout	<i>Kaempferia galanga</i> L. – rhizome	5	The ingredients are grinded to a powder. 100 ml boiling water is added and let it stand. It is filtered and drunk while it is warm before meal. It is taken three times a day before meal.
	<i>Zingiber officinale</i> Rosc. – rhizome	5	The ingredients are added 100 ml of boiling water and let them stand. The concoction is filtered and drunk before meal. It is taken three times a day before meal.
	<i>Melaleuca leucadendra</i> (L) – leaves	6-10	The ingredients are boiled with 400 ml of water until it becomes 200 ml. The concoction is cooled, filtered and drunk all at once.
Increase stamina	<i>Curcuma xanthorrhiza</i> Roxb. – fresh rhizome	25	The ingredients are boiled with 600 ml of water until it becomes 200 ml. The concoction is cooled, filtered and drunk. It is taken twice a day one hour before meal.
	<i>Curcuma domestica</i> Val – Fresh rhizome	15	The ingredients are boiled with 600 ml of water until it becomes 200 ml. The concoction is cooled, filtered and drunk all at once. It is taken three times a day one hour before meal.
Nausea and Vomiting	<i>Zingiber officinale</i> Rosc. – rhizome	1 – 2	The ingredients are added 200 ml boiling water and let them stand. The concoction is filtered and drunk while warm. It is taken twice a day.
Hemorrhoids	<i>Coleus scutellarioides</i> (L) benth. – leaves	25	The ingredients are boiled with 400 ml of water until it becomes 200 ml. The concoction is cooled, filtered and drunk all at once. It is taken once time a day.
Increase urine volumes	<i>Orthosiphon stamineus</i> Benth– leaves	25	The dried ingredients are boiled with 400 ml of water until it becomes 200 ml. The concoction is divided into 2 parts and taken in the morning and evening.
	<i>Imperata cylindrica</i> L. – rhizome	100	The ingredients are boiled with 600 ml of water until it becomes 200 ml. The concoction is cooled, filtered, and drunk. It is taken three times a day.
Urinary stone	<i>Imperata cylindrica</i> L. – rhizome	10	The dried ingredients are boiled with 400 ml of water until it becomes 200 ml. The concoction is cooled and filtered; then it is drunk while warm. It is taken three times a day.
	<i>Cinnamomum burmanii</i> (Ness & Th. Nees). – bark	2	The ingredients are added into 100 ml of boiling water and let them stand. The concoction is filtered and drunk while warm. It is taken twice a day.
Diabetes mellitus	<i>Momordica charantia</i> (L). – fresh vegetable	100	The ingredients are mashed and 100 ml of water is added. The concoction is squeezed and filtered. It can be drunk all at once. It is taken three times a day.
	<i>Tinospora crispa</i> (L). – stem	7.5	The dried ingredients are boiled with 300 mL of water until it becomes 150 ml. The concoction is cooled, filtered, and drunk all at once. It is taken twice a day.

Table 5: Formulation of traditional medicinal herbs and the indication of diseases.¹²

No. of Formulation	Indication of diseases	Composing of herbs or Formulation and the parts of the plant used
1	Arthritis	<i>Foeniculum vulgare</i> Miller - fructus <i>Orthosiphon aristatus</i> (Blume) Miq. – leaves <i>Acalypha indica</i> Linn – herbs <i>Curcuma xanthorrhiza</i> Roxb.-rhizome <i>Phyllanthus niruri</i> L. – herbs <i>Graptophyllum pictum</i> (L.) Griff, – leaves <i>Desmodium triquetrum</i> (L.) DC. – leaves
2	Hemorrhoids	<i>Coleus scutellarioides</i> (L.) Benth. – leaves <i>Curcuma xanthorrhiza</i> Roxb.-rhizome <i>Curcuma longa</i> L. – rhizome <i>Phyllanthus niruri</i> L. – herb <i>Taraxacum mongolicum</i> Hand.-Mazz. – herb
3	Liver problem	<i>Curcuma xanthorrhiza</i> Roxb.-rhizome <i>Curcuma longa</i> L. – rhizome <i>Guazuma ulmifolia</i> Lamk. – leaves
4	Reduce body weight	<i>Sonchus arvensis</i> L. – herb <i>Rheum officinale</i> L. – leaves <i>Murraya paniculata</i> L. Jack – leaves <i>Sonchus arvensis</i> L. – herb <i>Orthosiphon aristatus</i> (Blume) Miq. – leaves <i>Strobilanthes crispus</i> Blume. – leaves
5	Urinary stones	<i>Imperata cylindrica</i> (L.) P.Beauv. – roots <i>Curcuma longa</i> L. – rhizome <i>Curcuma xanthorrhiza</i> Roxb.-rhizome <i>Phyllanthus niruri</i> L. – herb <i>Sonchus arvensis</i> L. – herb <i>Biancaea sappan</i> L. Tod. – wood <i>Stelechocarpus burahol</i> L. – leaves
6	Uric acid	<i>Curcuma xanthorrhiza</i> Roxb.-rhizome <i>Curcuma longa</i> L. – rhizome <i>Phyllanthus niruri</i> L. – herb <i>Celery</i> (<i>Apium graveolens</i> L.) – leaves <i>Centella asiatica</i> L. – herbs
7	Reduce high blood pressure	<i>Orthosiphon aristatus</i> (Blume) Miq. – leaves <i>Curcuma xanthorrhiza</i> Roxb.-rhizome <i>Curcuma longa</i> L. – rhizome <i>Phyllanthus niruri</i> L. – herb <i>Blumea balsamifera</i> L. – leaves
8	Gastritis	<i>Nigella sativa</i> L. –seeds <i>Curcuma longa</i> L. – rhizome <i>Zingiber officinale</i> Roscoe – rhizome <i>Senna alexandrina</i> Mill. <i>Guazuma ulmifolia</i> Lamk. <i>Sonchus arvensis</i> L. – herb
9	Reduce blood cholesterol	<i>Camellia sinensis</i> (L.) Kuntze <i>Curcuma xanthorrhiza</i> Roxb.-rhizome <i>Curcuma longa</i> L. – rhizome <i>Phyllanthus niruri</i> L. – herb <i>Syzygium polyanthum</i> (Wight) Walp. – leaves
10	Reduce blood glucose	<i>Andrographis paniculata</i> (Burm. F) Nees <i>Cinnamomum burmani</i> (Nees) BI <i>Curcuma xanthorrhiza</i> Roxb.-rhizome <i>Curcuma xanthorrhiza</i> Roxb.-rhizome
11	Physical fitness	<i>Curcuma longa</i> L. – rhizome <i>Phyllanthus niruri</i> L. – herb

Note: For all Formulations: Each ingredient was weighed 10 g and was boiled with 400 ml of water for 15 minutes. The potion can be taken twice a day.

Table 6: Formulation of traditional medicinal herbs and the indication of diseases.⁸⁻¹²

No	Indication of diseases	References				
		1 st Formulary	2 nd Formulary	3 rd Formulary	FROTI	Saintification Formulary
1	Arthritis					+
2	Blood fat / blood cholesterol – reduce blood fat	+				+
3	Blood glucose – reduce					+
4	Body weight – reduce					+
5	Cancer-maintaining the health conditions of patient			+		
6	Cough		+		+	
7	Diabetes mellitus	+			+	
8	Gastritis					+
9	Gout				+	
10	Hemorrhoids		+		+	+
11	High blood pressure – reduce			+		+
12	Liver problem			+		+
13	Nausea and vomiting				+	
14	Uric acid					+
15	Urine volumes – increase				+	
16	Urinary stone / kidney stone	+			+	+
17	Physical fitness				+	+

of Medicinal Plants and Traditional Medicine (B2P2TOOT) Health Research and Development Agency (Balitbangkes) Ministry of Health.¹² or saintification formulary as follows. (Table 5)

There are 11 types of herbal ingredients that have been scientifically proven to treat various diseases.

Saintification formulary from B2P2TOOT gave the solution of several diseases among others the formula for arthritis, hemorrhoid, liver problem, reduce body weight, urinary stone, uric acid, reduce high blood pressure, gastritis, reduce blood cholesterol, reduce blood glucose, and physical fitness.

From the references were collected above, several formulations for indication of diseases was found as follow (Table 6): the formula for reduce blood fat or blood cholesterol, help to relieve diabetes mellitus, dissolve kidney stone or urinary stone, cough, helps to relieve hemorrhoids, relieve liver problem, maintain the health conditions of cancer patients, reduce high blood pressure, gout, nausea and vomiting, increased urine volumes, arthritis, reduce body weight, uric acid, gastritis, and physical fitness.

In the methods have already explained the point number 3 can be applied in this study by aligning with government healthcare programs, namely informing and educating the public about health, the factors that influence it, and how to improve it.

Traditional medicine is widely used for the following reasons: potential for treating disease, perceiving safety, affordability, and accessibility. However, the use of traditional medicine will be dangerous or cause many risks, if ingredients, processing of formulation, and drinking rules are not standardized.¹⁴

For the realization of the point 3 above and to reduce the risk due to non-standard use, the first step the references from the government namely some of The Formulary of Traditional Indonesian Medicinal herbs were collected which then in the second step all the formulary books were investigated *via* indication of diseases, formulation, composition of herbs and water, quantity (g) for once processing, processing of formulation and drinking rule.

The results of the government's efforts in documenting the ingredients used by the community have been documented in several books, among other Formulary of Indonesian traditional medicine concoction in

2011, 2012, 2013, 2017 and the Formularies of traditional Indonesian medicinal herbs that were resulted based on the scientific study in (B2P2TOOT).

The collected data showed that the Indonesian people are familiar with using plants for body health and using the concoction such as the length/sizes of the ingredients (stem or rhizome) that were compared with the part of hand (finger and other), the number of leaves blade and until using the units of grams. As well as parts of plants, fresh or dried, processing of formulation, and drinking rules were presented.

From each book of this formulary was carried out in the study again for each formula. The formula that was quoted namely the formula that has clarity of the ingredient's utilization, especially the weight of ingredients in units of grams. The results of this study showed that several formulas can be used and was introduced to the community as presented in Tables 1 to 6.

From the results listed in table 6, it appears that there are many formulations which were used to treat non-communicable diseases. One of the government regulations is Healthy Indonesia Program with a Family Approach (PIS-DPK), the main areas of this program are Maternal Health, Child Health, Communicable Disease Control, Non-communicable Disease (NCD) Control.¹³ Therefore the formulas that have been collected can support the Healthy Indonesia Program with a Family Approach (PIS-DPK) at which one of the main areas of this program is NCD Control.¹³

Indonesia had its own tradition of traditional medicine which involves the use of herbal medicines, such as jamu.¹⁵

The use of traditional medicine by the Indonesian people is quite high, one of which is jamu.

Those who consumed herbal medicine, who was approximately 95.60% stated that they had experienced the benefits.¹⁶

Studies on housewives in Cicanir and Jatipamor villages showed they drank jamu to prevent and treat diseases. The percentages were Cicanir 40.79% and Jatipamor 25.86%,¹⁷ and on fishing communities in the village of Kanci Kulon reported they used jamu to maintain health and treat disease. The number of fishermen wives who drink jamu was 89%.¹⁸ The figure of a fisherman's wife (mother), had many important roles, one of the roles was being positioned as the manager

of family health.^{19,20} Therefore, the habit of using herbal medicine by housewife in Cicanir and Jatipamor, and fishermen wives in Kanci Kulon villages really supports the Healthy Indonesia Program with a Family Approach.

The Basic Health Research in 2018 reported that in West Java province there are still many people who use traditional medicine. Utilization profile of the traditional medicine was divided in two types, namely ready-made ingredients (Ramuan Jadi = RJ) and homemade ingredients (Ramuan Buat Sendiri = RBS). The percentage profile of people in West Java Province in 2018 who use RJ and RBS were 51,9% and 28.1%, respectively.⁶

The West Java Province Basic Health Research in 2018 described important data. Based on gender the percentage of people who use RJ and RBS were as follows: for male percentages of RJ was 48.73%, and RBS was 26.39% and female percentages of RJ was 54.91%, RBS was 29.84%. Based on education, the percentage of people from low education to university (university) still uses herbal medicine, the range percentages of the people who use RJ and RBS are as follows: RJ were 41.2%–64.46%, and RBS were 24.37%–35.38%. Based on work, many workers as the private or the government still use herbal medicine, the range percentages of people who use RJ and RBS are as follows: RJ were 39.07%–74.40%, and RBS was 21.16%–39.40%. Based on the residence the percentage of people who use RJ and RBS are as follows: city of RJ was 52.09%, and RBS was 25.89%, in the village of RJ was 51.11%, and RBS was 35.38%.²¹

Based on National and Provincial Basic Health Research Studies in 2018 as well as government efforts aimed at increasing disease prevention (preventive) and improving health promotion (promotive), as well as possible efforts to improve public health status including treatment of disease (curative) and health restoration (rehabilitative), the formulas of the results of this study were useful for encouraging health literacy in the village, as well as for empowering the community to build a community health system in the village and increase community participation in the implementation of the Healthy Indonesia Program with a Family Approach, which is a Government Health Program.

CONCLUSION

The formulas as the result of the study from some The Indonesian Traditional Medicinal Formulary can support the developing use and implementation of traditional medicines in the Government Health Program.

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CONFLICTS OF INTEREST

No conflicts of interest in our study.

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