

HERBAL AND MEDICINAL PLANTS IN INDONESIA



**Forest Product Research and Development Center
Environment and Forestry Research, Development and Innovation Agency
Ministry of Environment and Forestry**

CONTENTS

I. Research and development activities on HMP

II. Production and marketing of HMP products

III. Private sectors involvement

IV. Conservation initiatives on HMP



I. Research and Development Activities on HMP

A. Guidelines

1. National Research Master Plan 2015-2040

There are 10 research topics, one of them Health and Medicine that focuses on Biopharmaceutical, Health instrument and diagnostic, and Medicinal Resources Technology.

The Medicinal Resources Technology focuses on Local phitopharmacy, chemical substance, and jamu and herbal scientification.

2. Roadmap of Environment and Forestry Research and Development 2010-2025

- Herbal and Medicinal Plants is one of the subtopic under Non Timber Forest Product topic.
- Base on its research status HMP is differentiated into 3 categories: preliminary, intermediate and advance.
- Roadmap divided into three Five-year Integrated Research and Development Plans (2010-2014, 2014-2019, and 2020-2025). In this 2014-2019 Integrated R & D Plan the HMP reserch covers 10 species: pakoba (*Tricalysa minahassa*), dragon blood (*Daeromonorops spp*), gaharu/sandalwood (*Aquilaria spp* and *Girinops versteegii*), gemor (*Notopheebe coriaceal*), jamblang (*Syzygium cumini*), faloak (*Sterculia quadrifida*), pranajiwa (*Euhresta horsfieldii*), bidara laut (*Storynosch lucida*), kilemo (*Litsea cubeba*), dan kayu putih (*Eucalyptus cajuputi*).

B. Research aspects

HMP research and development varied base on its research status. It covers: ethnobotany; ethnopharmacolgy; chemical entity; cultivation/silviculture; genetic improvement; product processing and packaging; conservation; and financial, social, institutional, and market analysis.

For example, the Environment and Forestry Research, Development and Inovation Agency made a research on kayu putih (*Melaleuca cajuputi*) genetic improvement that produced a cajuput genetically improved variety which can produce eucalyptus oil between 2-3.8% and 1.8% cineole content level, that is 2 to 4 times the yield of eucalyptus oil without genetic improvement.

C. Research and Development Agents

- There are a lot of HMP research and development agents in Indonesia. They come from universities; government R & D agencies, such as Ministry of Health, Ministry of Agriculture, Ministry of Environment and Forestry, and others; private sectors; local communities; and international organization.
- The Ministry of Health found a special agency for HMP research and development, that is Medicinal Plants and Traditional Medicine Research and Development Agency at Tawangmangu, Center Java.
- The government also found the National Working Group on Indonesia Medicinal Plants (Pokjanas TOI)

II. Production and Marketing of HMP Products

- In Indonesia, Herbal traditional medicine especially Jamu is hereditary legacy which is based on natural resources and has known in Indonesia as a daily health care or traditional wisdom.
- In the medical world there has been a shift in terms of health maintenance, i.e. from the treat (curative) to be the preventive, promotive and palliative, from the use of chemical drugs and then switch to natural drugs.

Policy about Herbal Medicine in Indonesia

- Indonesia has abundance of traditional medicine and medicinal plants. In one side it should be promoted to use herbal and traditional medicine, but in the other side it needs control to protect people from irresponsible person. For that reason the government found a Supervisory Agency on Medicine and Food (BPOM) under the Ministry of Health.
- All marketed medicines, including traditional medicine, must be registered and fulfilled criteria that regulated by BPOM .
- In 2017 there are 869 traditional medicines that have been registered by BPOM, it may be increase by the time.

Example regulation:

- BPOM decree No. HK .00.05.4.2411/2004: Principal Criteria on Indonesia Herbal Grouping and Marking
Jamu, Standardize herbal, Phitopharmaca
- BPOM decree No.12 /2014: Traditional medicine quality prerequisite:
- BPOM decree No. 9/2017: Prohibition of *Cassia senaa* and *Rheum officinale* in medicine
- President Direction No. 3/2017: Raising Control on Medicine and Food

3 (three) categories Tradisional Medicine in Indonesia

jamu



Secure

Fulfill the quality requirements

Empirically proven efficacy

-

**standardized
herbal medicines**



Secure

Fulfill the quality requirements

Efficacy proven scientifically or preclinical

Raw materials used standardized

**Phyto
pharmaca**



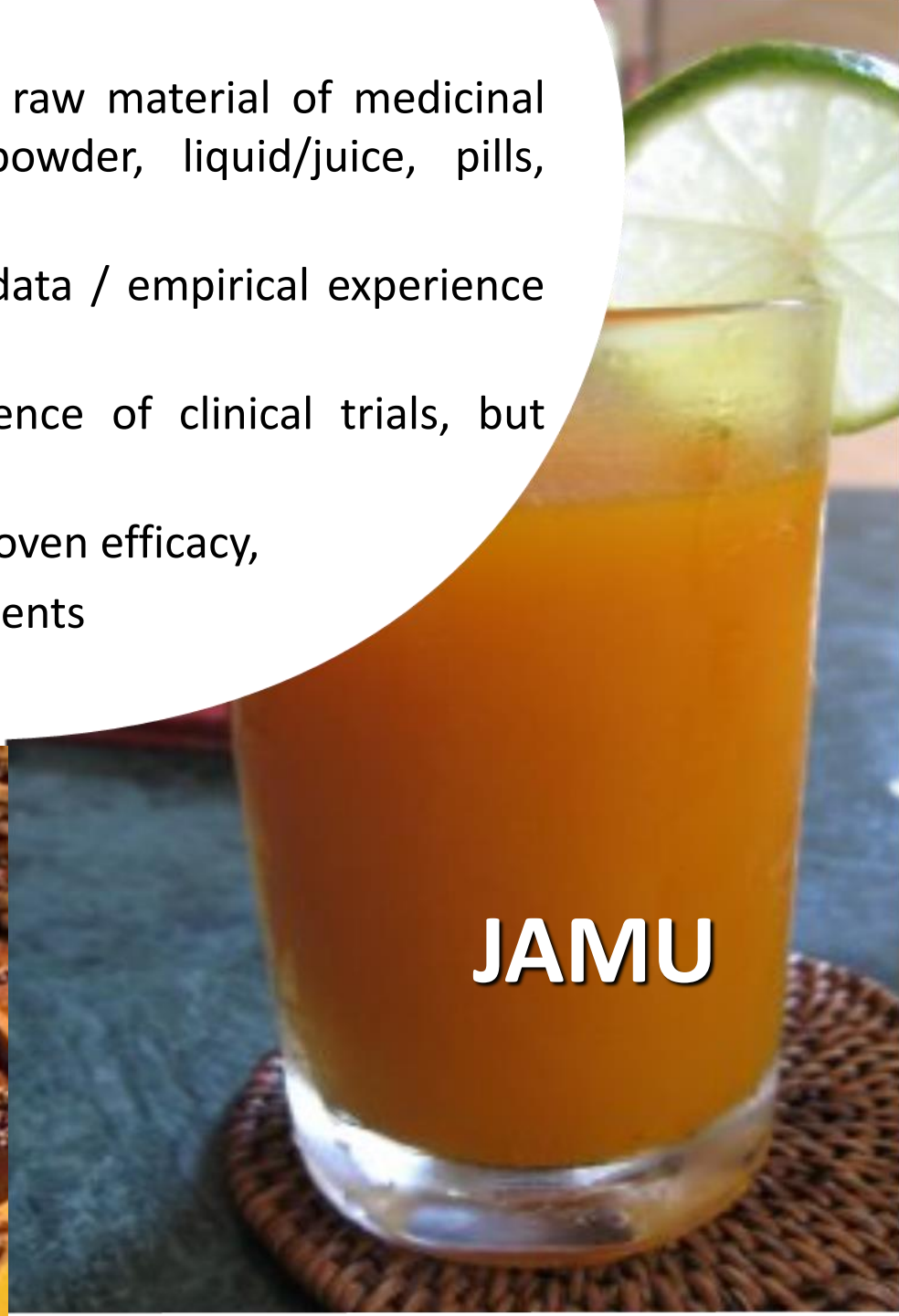
Secure

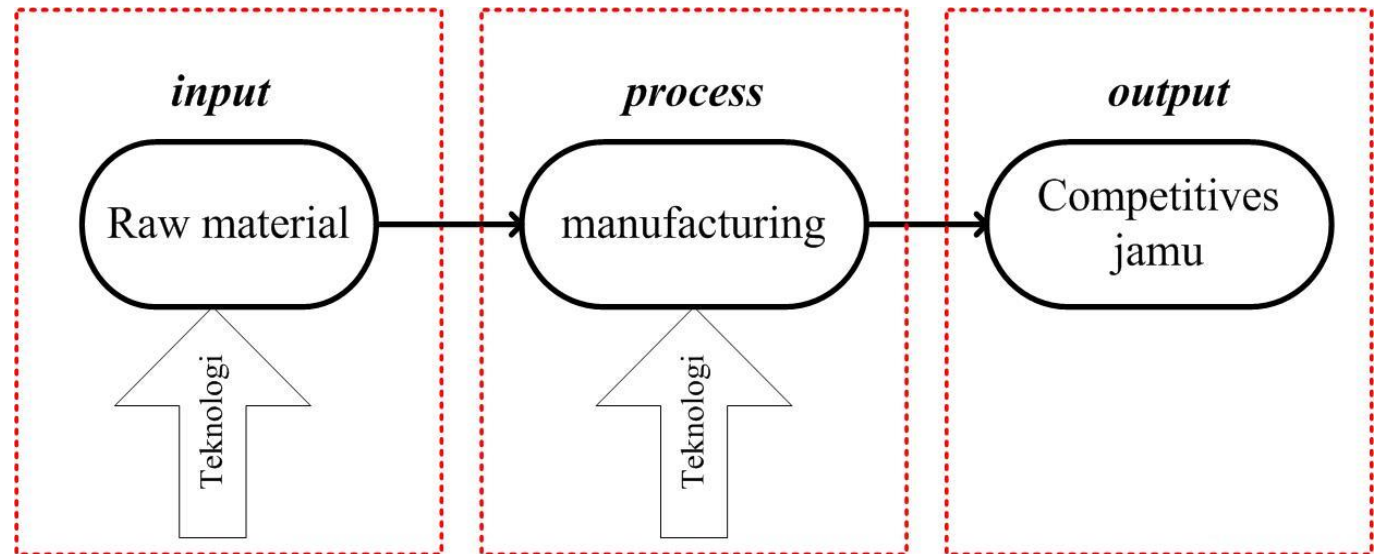
Fulfill the quality requirements

Efficacy clinically proven

Raw materials used standardized

- Jamu is a natural herb formula with raw material of medicinal plant in simple form (chopped, powder, liquid/juice, pills, capsule).
- The efficacy of its use based on the data / empirical experience that is hereditary.
- Jamu do not require scientific evidence of clinical trials, but enough with the empirical evidence.
- In addition to the claims empirically proven efficacy, Jamu also have to meet safety requirements and quality standards.



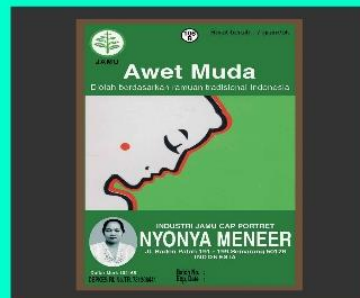


The flows of making jamu

- Product of Indonesian Jamu could be simplicia or traditional medicine.
- The market of Jamu is for domestic consumption, but there are also some products that have been marketed internationally such as *tolak angin*.

Examples of Medicinal Products (Jamu)

No	Product	Produsen
1	Antangin	PT. Deltomed Laboratories
2	Gravica	PT. Soho Global Health
3	Mimba	PT. Dexe Medica
4	Jamu Awet Muda	PT. Nyonya Meneer



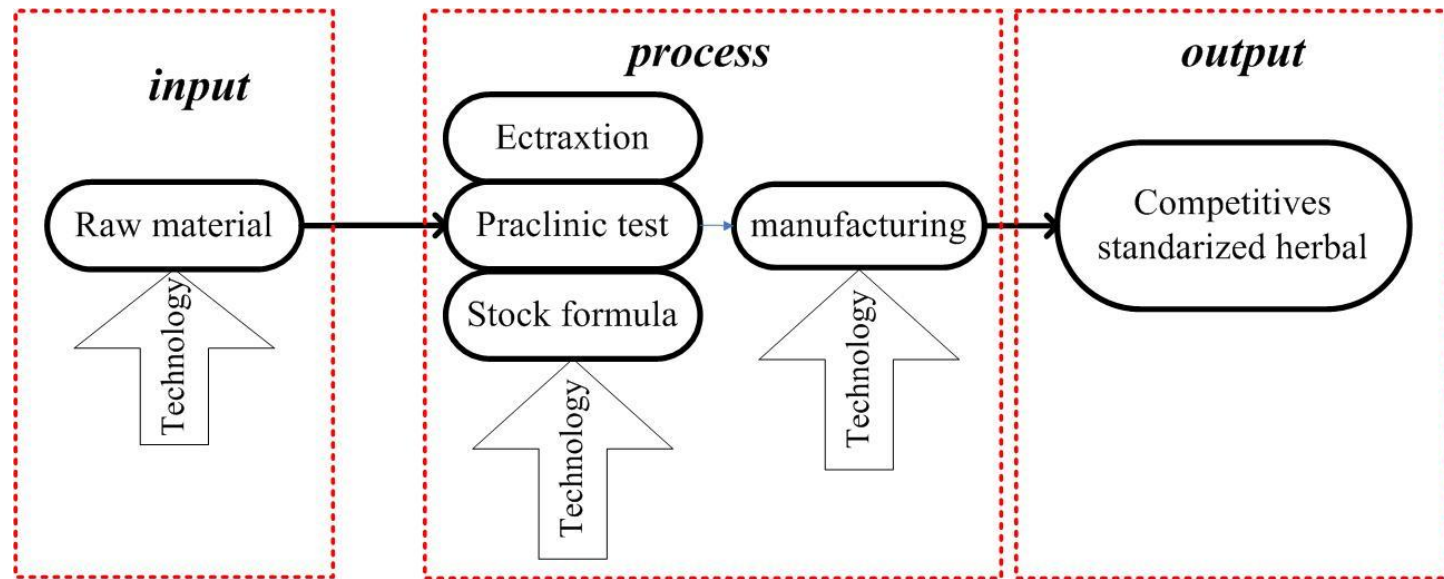


Standardized Herbal

Standardized herbal is stocks of natural medicines with raw materials of medicinal plant extract which has been standardized and have passed the preclinical trials (efficacy test and toxicity in experimental animals).

- In the manufacturing process, the equipment needed is not simple and is more expensive than Jamu.
- Standardized herbal medicines are generally supported by scientific evidence in the form of preclinical studies.

This study includes the standardization of the material content of efficacious compounds, standardization of extract manufacture hygienic, and acute and chronic toxicity test.



The flows of making standardized herbal

No.	Product	Producer
1	Diabmeneer	PT. Nyonya Meneer
2	Diapet	PT. Soho Industri Farmasi
3	Fitogaster	PT. Kimia Farma
4	Glucogard	PT. Phapros
5	Irex Max	PT. Bintang Toedjoe
6	Kiranti Pegal Linu	PT. Ultra Prima Abadi
7	Kiranti Sehat datang Bulan	PT. Ultra Prima Abadi
8	Lelap	PT. Soho Industri Farmasi
9	Songgolangit	PT. Songgolangit Herbal Ind
10	Stop Diar plus	PT. Air Mancur
11	Virugon	PT. Konimex

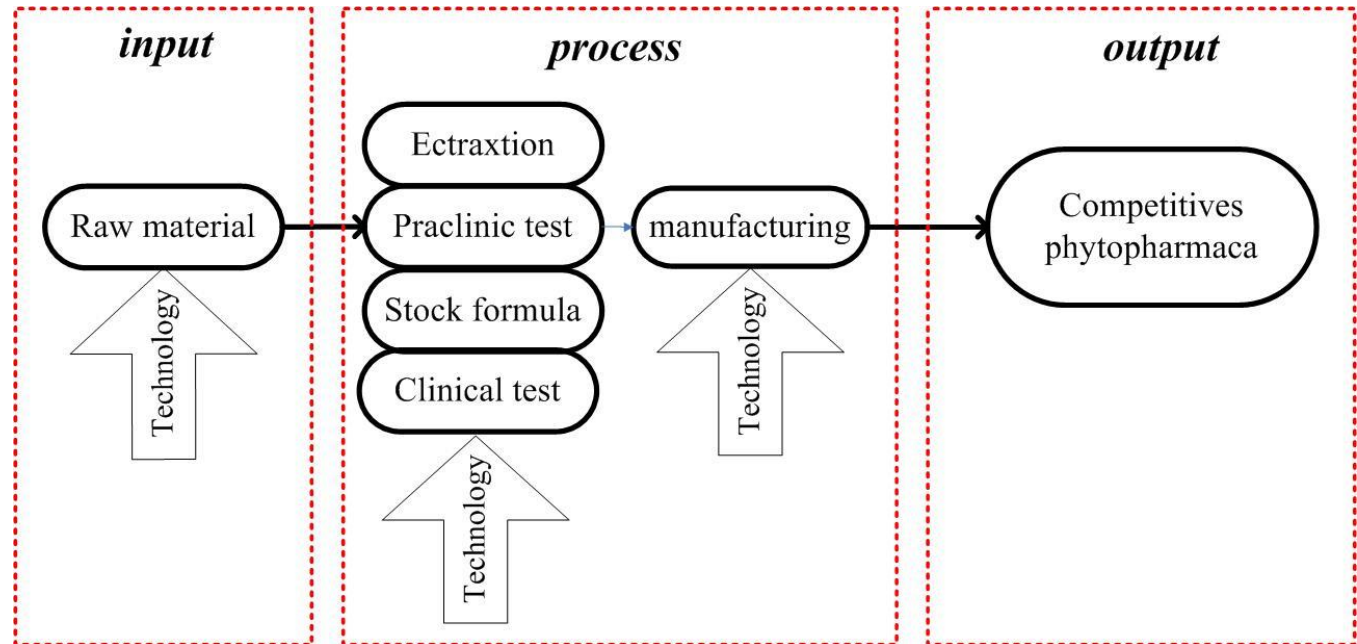
Standardized herbal products



- Phytopharmaca is herb formula of natural medicine with the raw materials of medicinal plant extracts that have been standardized and qualified preclinical trials (efficacy and toxicity testing in animals) and clinical trials (trials on patients in the hospital).
- It is a traditional medicine that can be aligned with modern medicine.

PHYTOPHARMACA

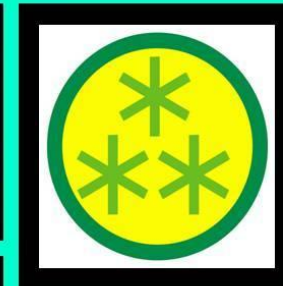
- The manufacturing process has been standardized, supported by scientific evidence to clinical trials in humans.
- Therefore, in the making of phytopharmaca is necessary of modern technology equipment, expertise, and cost is not small.



The flows of making phytopharmaca

Examples of phytopharmaca products

No.	Product	Producer
1	Nodiar	PT. Kimia Farma
2	Rheumaneer	PT. Nyonya Meneer
3	Stimuno	PT. Dexa Medica
4	Tensigard Agromed	PT. Phapros
5	X-Gra	PT. Phapros



FITOFARMAKA

Marketing HMP Products

- Seminars
- Exhibitions
- Creating events
- Traditional medicine tours
- Promotion through electronic and publication media
- Online marketing, etc.

Some marketing policies:

- **2007** → establishment of traditional medicine policy (kotranas) by the Minister of Health
- **2008** → declaration of jamu as Indonesian brand by the various stakeholders
- **May 27, 2008** → President declared as the day of resurrection *Indonesian Jamu*
- **January 16, 2010** → establishment of traditional medicine as a complement clinical treatment by physicians. Scientific revival initial of Jamu was declaration of saintifikasi by the Minister of Health

“Jamu” scientification

- The decree of Ministry of Health in 2010 Indonesia develops the National Program called “Jamu” Scientification
- Research in 60 clinics, for 4 formula for:
 - Anti hypertension
 - Anti-cholesterol
 - Anti-diabetes
 - Anti uric-acid
- Training for medical doctor in herbal medicine: 90 have been trained



- About 60 trained doctor from 48 clinics and 1 hospital involve in the pre clinic and post clinic in scientification of jamu
- The research results will be used as prescription



III. Private sectors involvement

- In Indonesia, the production of herbal medicines made by private parties that cooperate with the government
- In general the materials used by the herbal industry is standardized herbal
- The private companies also actively make research on HMP.
- Entrepreneurs herbal medicines in Indonesia are join in the Association of Indonesian Herbal Medicine and Traditional Medicines which is abbreviated **GP Jamu**.

- members of the GP Jamu → *over a hundred companies* in the various provinces in Indonesia
- Some of members of GP Jamu involved in the herbal industry are the following:
 1. PT. Nyonya Meneer
 2. PT. Mahkotadewa Indonesia
 3. PT. Capung Indah Abadi
 4. PT Dexa Medica
 5. PT Industri Jamu Borobudur
 6. PT. Jamu Jago
 7. PT. Mustika Ratu. Tbk.
 8. PT. Jamu Indonesia Simona
 9. PT. Industri Jamu dan Farmasi Sido Muncul
 10. others

IV. Conservation initiatives on HMP

- Conservation initiatives on herbal and medicinal plants in Indonesia were conducted through several ways in terms of in situ, ex situ and invitro conservation.
- **In situ conservation:**
 - Developing National database on potential HMP in all areas of Indonesia.
 - Collection plots of medicinal plants in National Parks (there are 50 national parks in Indonesia), Research Forest/ Hutan Penelitian, and Forest for Special Use/ Kawasan Hutan dengan Tujuan Khusus (KHDTK)
 - Developing genetic resources area
 - Conserving seed tree resources.

Ex situ conservation:

- Collection plots in botanical garden, in private sectors area, schools, and government offices. Collection plots in local government offices usually consists of local species of medicinal plants, particularly those become the icon of the provincial or dictricts.
- Developing demonstration plots on herbal and medicinal plants with participation of local community
- Developing family garden of medicinal plants (Tanaman Obat Keluarga/TOGA) as a national program for house hold empowerment.

In Vitro conservation:

- In vitro conservation in Indonesia mainly aimed to prevent the genetic erosion particularly for the local species that are not cultivated yet or it has been highly exploited and becoming endangered. This kind of conservation is also conducted to find the suitable or appropriate technology to preserve the HMP species for short, medium and long term based on; 1) preservation in normal growth, 2) preservation in slow or minimum growth, and preservation through freezing/ krio-preservation.
- This technology is useful for HMP with recalcitrant seeds and those growing through vegetative propagation. For example, for Ginger which grows through vegetative, after in vitro conservation of Ginger came from organogenesis and embryogenesis, it is found that the growth of ginger came from embryogenesis is more efficient than those coming from organogenesis.

THANK YOU