



Utilization of KNApSack Family Databases for Developing Herbal Medicine Systems

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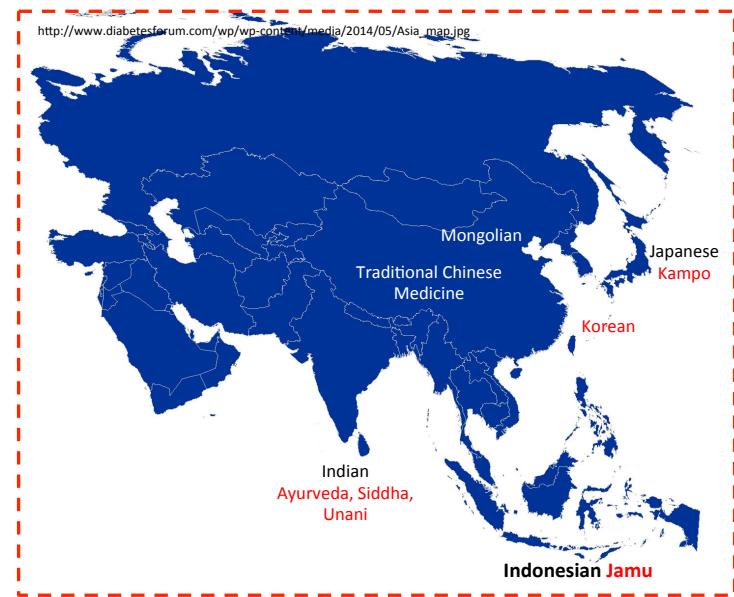
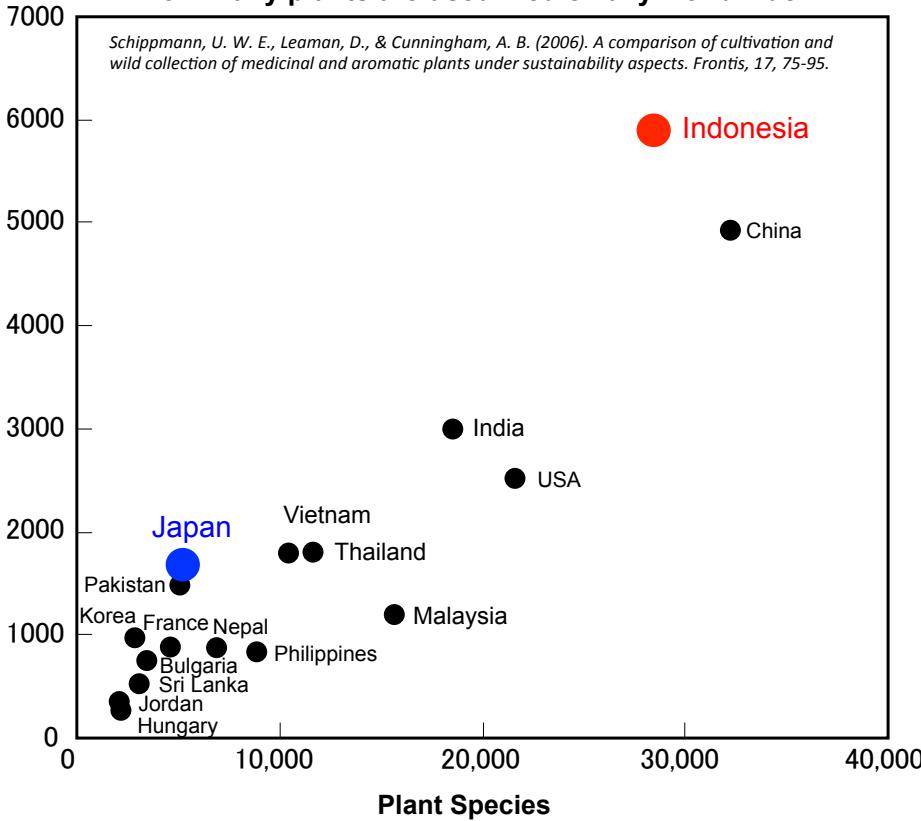
Outline

- Herbal medicines
- Objectives and methods
- KNApSAcK Family Databases (KNApSAcK Kampo and Jamu)
- Herbal Medicine Systems
- Demo
- Conclusions

Medicinal Plants

There are 40,000 - 70,000 medicinal plants around the world (Verpoorte et al. 2006) which are used as blended herbal medicines

How many plants are used medicinally worldwide?



Nowadays, many countries utilize these plants as ingredients of crude drug medicines

i.e. Indonesian Jamu



Jamu

→ **Indonesian herbal medicines are made from a mixture of several plants ***

* registered at The National Agency of Drug and Food Control (NA-DFC) of Indonesia

Traditionally

Curcuma longa
(Curcumin/Kunyit)



Rhizome: fever, diarrhea, shortness of breath, inflammation of the nose

http://kanaya.naist.jp/KNAPSAck_Family/

Tamarindus indica
(Tamarind/Asam)



Fruits: antibacterial, antioxidant, laxative, abdominal pain, wound healing, malaria, fever

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3210002/>

Select and **mix** several plants* such that the concoction has the desired efficacy

* based on experiences and the efficacy of Jamu formulas have been empirically demonstrated (Adnyana & Soemardji, 2007; Pramono 2007)

Nowadays

Kunyit Asam
Sido Muncul Corp, Indonesia



Facilitate menstruation, body scent, refreshing, smoothing as well as streamline and female reproductive organ problems

Jamu remedies are produced commercially on an **industrial scale**

Although individual producers have their own Jamu formulas, it is clear that **the efficacy is determined by the composition of the plants used** (Pramono 2007)

The problems are...

- The information about herbal medicine is still scattered



Internet and related DB

DBs:

KNAPSAcK Kampo, KNAPSAcK
Jamu, KEGG drug, TCMID,
TCM@Taiwan, ETHMEDmmm
and still increasing.



Herbal Medicine' books



Herbal Medicine' wraps

Publications related to herbal medicines

The number of research and publications related to crude drug systems are increasing

Indonesian Jamu

2010

Afendi, F. M., Darusman, L. K., Hirai, A., Altaf-Ul-Amin, M., Takahashi, H., Nakamura, K., & Kanaya, S. (2010, December). **System Biology Approach for Elucidating the Relationship Between Indonesian Herbal Plants and the Efficacy of Jamu.** In Data Mining Workshops (ICDMW), 2010 IEEE International Conference on (pp. 661-668). IEEE.

2012

Afendi, F. M., Okada, T., Yamazaki, M., Hirai-Morita, A., Nakamura, Y., Nakamura, K., Ikeda, S., Takahashi, H., Altaf-Ul-Amin, Md., Darusman, LK., Saito, K., & Kanaya, S. (2012). **KNApSACk Family Databases; Integrated Metabolite-Plant Species Databases for Multifaceted Plant Research.** *Plant and Cell Physiology*, 53(2), e1-e1.

Afendi, F. M., Darusman, L. K., Fukuyama, M., Altaf-Ul-Amin, M., & Kanaya, S. (2012). **A Bootstrapping Approach for Investigating the Consistency of Assignment of Plants to Jamu Efficacy by PLS-DA Model.** *Malaysian Journal of Mathematical Sciences*, 6(2), 147-164.

2013

Afendi, F. M., Ono, N., Nakamura, Y., Nakamura, K., Darusman, L. K., Kibinge, N., Morita, AH., Tanaka, K., Horai, H., Altaf-Ul-Amin, Md., & Kanaya, S. (2013). **Data Mining Methods for Omics and Knowledge of Crude Medicinal Plants towards Big Data Biology.** *Computational and structural biotechnology journal*, 4(5), 1-14.

M Afendi, F., K Darusman, L., Hirai Morita, A., Altaf-Ul-Amin, M., Takahashi, H., Nakamura, K., Tanaka, K., & Kanaya, S. (2013). **Efficacy Prediction of Jamu Formulations by PLS-Modeling.** *Current computer-aided drug design*, 9(1), 46-59.

2014

Wijaya, SH., Husnawati, H., Afendi, FM., Batubara, I., Darusman, LK., Altaf-Ul-Amin, M., Sato, T., Ono, N., Sugiura, T., & Kanaya, S. (2014). **Supervised Clustering Based on DPCLUSO: Prediction of Plant-Disease Relations Using Jamu Formulas of KNApSACk Database.** *BioMed Research International*, 2014.

2015

Tanaka, Y., Wijaya, SH., Ono, N., Altaf-Ul-Amin, M., Kanaya, S. (2015). **Prediction of Jamu Efficacies based on Its Ingredients using Naïve Bayes and Random Forest Classifiers.** *The Third International Symposium on Temulawak and Potential Plants for Jamu*, 2015.

Traditional Chinese Medicine



Traditional chinese medicine

S Mosadeghi - Reactions, 2015 - Springer

A 35-year-old man developed colonic linear hyperpigmentation while receiving a traditional Chinese medicine [Indigo Naturalis]. The man, who had been diagnosed with ulcerative colitis at the age of 24, started receiving traditional Chinese medicine one-half teaspoon ...

Related articles Cite Save

Ameliorating effects of traditional Chinese medicine on lipopolysaccharide-induced microcirculatory disturbances and organ injury.

K Sun, CS Pan, QLL O Furukawa, JY Fan... - *Endocrine, metabolic & ...*, 2015 - europepmc.org

Gram-negative bacteria are one of the major pathogens associated with severe sepsis and

septic shock. LPS is a component of the outer membrane of gram-negative bacteria, which

causes a systemic, uncontrolled inflammatory response in infected subjects. In ...

All 2 versions Cite Save More

Huo-Luo-Xiao-Ling (HLXL)-Dan, a **Traditional Chinese Medicine**, for patients with FullText@NAIST

osteoarthritis of the knee: a multi-site, randomized, double-blind, placebo-controlled ...

L Lao, M Hochberg, DWY Lee, AMK Gilpin... - *Osteoarthritis and ...*, 2015 - Elsevier

Objective To examine the efficacy and safety of Huo-Luo-Xiao-Ling (HLXL)-Dan, a

Traditional Chinese Medicine (TCM), in patients with knee osteoarthritis (OA). Design A multi-site, randomized, double-blind, placebo-controlled phase II dose-escalation clinical trial ...

Cited by 1 Cite Save

[CITATION] ... CHINENSE (L) DC: ETHNOPHARMACOLOGY, PHYTOCHEMISTRY FullText@NAIST AND PHARMACOLOGY OF AN IMPORTANT TRADITIONAL CHINESE MEDICINE

R Xin, J Zheng, L Cheng, W Peng... - *African Journal of ...*, 2015 - journals.sfu.ca

Background: Belamcanda chinensis (L.) DC (Rubiaceae), a widely used traditional Chinese medicine known as Shu-Gan (Chinese: 薏苡), is a flowering perennial herb native to East Asia. For thousands of years in China, the rhizome of Belamcanda chinensis has been used to treat ...

Cite Save More

A traditional Chinese medicine, Lujiao prescription, as a potential therapy for FullText@NAIST

hypertrophic cardiomyocytes by acting on histone acetylation

W Zhao, JY Hu, X Wang, N Xie, Q Hu, M Zhou - *Journal of the Chinese ...*, 2015 - Elsevier

Background Chronic heart failure (CHF) is a complex clinical syndrome, and a serious stage of various heart diseases. Dysfunction of histone acetylation is involved in pathogenesis of CHF. Lujiao is a clinical and traditional prescription that has been previously used in the ...

Related articles All 5 versions Cite Save

When the East meets the West: the future of traditional Chinese medicine in the 21st century

J Qiu - National Science Review, 2015 - nsr.oxfordjournals.org

Abstract **Traditional Chinese medicine** (TCM) has been practiced in China for thousands of years. In the past decade, there have been intensive debates in China about the nature of this ancient practice and its future development. Some critics argue that TCM theories are ...

Cite Save More

Satisfaction and Preference for Traditional Chinese Medicine Drugs Among Guardians of Children with Acute Bronchiolitis

X Shang, T Labasverukali... - *The Journal of ...*, 2015 - online.libertpub.com

Abstract Objectives: To evaluate the satisfaction, concerns, and preference for **Traditional Chinese Medicine** (TCM) drugs among guardians of children with acute bronchiolitis, assess the agreement between satisfaction and preference, and explore the factors associated ...

Cite Save More

The problems are...

- The information about herbal medicine is still scattered



Internet and related DB

DBs:

KNApSAcK Kampo, KNApSAcK
Jamu, KEGG drug, TCMID,
TCM@Taiwan, ETHMEDmmm
and still increasing.



Herbal Medicine' books



Herbal Medicine' wraps

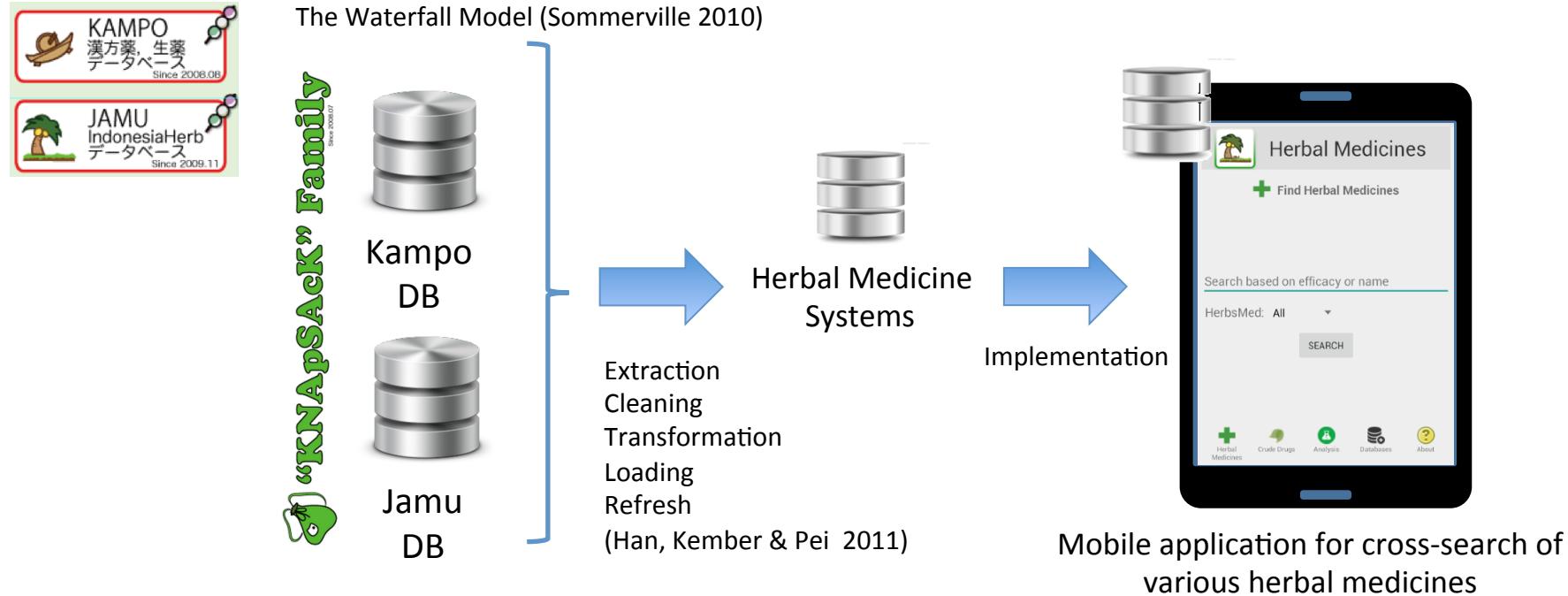
- The number of research and publications related to crude drug systems are increasing → it needs a tool to disseminate research results



Therefore, a standardized tool that provides information about various herbal medicines is needed.

Objectives and Methods

We develop a **mobile application** for various kind of **herbal medicines**



The purposes of developing **Herbal Medicine Systems** application are to promote the use of **herbal medicines** and to provide references of **herbal medicines**



"KNApSACk" Family



KNApSACk Metabolomics



3D
Since 2012.11



Core System
Since 2004.04



Search Engine
Since 2008.12

Pocket Search for Functional Species

Food & Health



YAKUZEN
薬膳データベース
Since 2015.09



Lunch Box
食用データベース
Since 2008.07



DietNavi
病気予防データベース
Since 2012.11



FoodProcessor
加工食品データベース
Since 2012.11



DietDish
食べ合わせデータベース
Since 2012.11



MARCHE
旬データベース
Since 2014.04

Crude Drug



WorldMap
世界の薬用植物
データベース
Since 2009.06



KAMPO
漢方薬, 生薬
データベース
Since 2008.08



JAMU
IndonesiaHerb
データベース
Since 2009.11



Tea Pot
ハーブ
データベース
Since 2011.08

Biology



**Metabolite
Ecology**
Distribution
Since 2015.02



**Biological
Activity**
Natural Activity
Since 2011.08



**Biological
Activity**
Metabolite Activity
Since 2013.01

Picnic Gene Annotation



Arabidopsis
Since 2008.04



Bacillus
Since 2008.06



Human
Since 2009.03

Strap Correlation Coefficient



Arabidopsis
Since 2009.08



Bacillus

Pickaxe Metalloprotein Database



MetalMine
Since 2008.08

Motorcycle Metabolic Pathway



Motorcycle
Metabolic Pathway
代謝データベース
Since 2011.08

Bicycle Algae Metabolic Pathway



Bicycle
Algae Metabolic Pathway
代謝データベース
Since 2013.09

[Instruction Manual\(Japanese\)](#) [Instruction Manual\(English\)](#) 

KNApSack Metabolomics



3D

Since 2012.11



Core System



Search Engine

Since 2004.04

Since 2008.12

KNApSack-3D

- Search Menu -

Metabolite KNApSack_ID Organism

- Information -

Please select the kind of query and type in your query.
For example, choose "Metabolite" and type in "glibberellin", or
choose "Organism" and type in "arabidopsis thaliana", then click "search".

Installation of Java applet is required to view the 3D display of metabolites.
KNApSack-3D is a database for metabolite three-dimensional structures.
Developed by collaboration between,
Maebashi Institute of Technology and Nara Institute of Science and Technology.

- Link -

[KNApSack Family](#)

[KNApSack Core System](#)

[Balloon](#)



KNApSack Core System

[Link to Top page](#)
http://knamaya.naist.jp/knapsack_jsf/top.html

Incorporation to program:
[http://knamaya.naist.jp/knapsack_jsf/info.jsp?uname=\[item\]&word=\[keyword\]](http://knamaya.naist.jp/knapsack_jsf/info.jsp?uname=[item]&word=[keyword])
Here, [item] must be selected from one of the following words; "organism", "metabolite", "formula", "C_ID", and "CAS_ID".

< Example 1 >
Information on the metabolite assigned to C00000001 (a C_ID) can be retrieved by
http://knamaya.naist.jp/knapsack_jsf/info.jsp?uname=C_ID&word=C00000001

< Example 2 >
The reported metabolites in Bacillus (an organism) can be retrieved by
http://knamaya.naist.jp/knapsack_jsf/info.jsp?uname=organism&word=bacillus

Words for organisms or metabolites can be retrieved by providing at least three characters that forward matches with their strings.

CAUTION: (C) Any content included in KNApSack database cannot be re-distributed or used for commercial purposes by any user without contacting with KNApSack DB group (skanaya@gtc.naist.jp).

[Instruction Manual\(Japanese\)](#) [Instruction Manual\(English\)](#)

Select by ...

ALL Types Organism Metabolite Molecular formula C_ID CAS_ID

last update 2015/03/30
metabolite 50899 entries
metabolite-species pair 111199 entries
species 22350 entries



KNApSack: A Comprehensive Species-Metabolite Relationship Database

Yukiko Nakamura, Hiroko Asahi, Md. Altaf-Ul-Amin, Ken Kurokawa and Shigehiko Kanaya.

| | |
|------------------------------------|----------------|
| last update | 2015/03/30 |
| metabolite | 50899 entries |
| metabolite-species pair | 111199 entries |
| KNApSack Family -web applications- | |
| KNApSack Family | |

Download: Version 1.200.03 (2008/12/19)
[KNApSack-v1.200.03.zip](#)
[KNApSack-v1.200.03.j2b](#)
[KNApSack-v1.200.03.tar.gz](#)

WEB: Keyword Search Web Version 1.000.01(2008/06/23)
[KNApSack Keyword Search](#)

Online Manual
[Instruction manual for KNApSack](#):
[A Comprehensive Species-Metabolite Relationship Database](#)
[Instruction manual for KNApSack \(Japanese\)](#)

KNApSACK Family Databases

Pocket

Search for Functional Species

Food & Health



YAKUZEN
薬膳データベース
Since 2015.09

Lunch Box
食用データベース
Since 2008.07

DietNavi
病気予防データベース
Since 2012.11

FoodProcessor
加工食品データベース
Since 2012.11

DietDish
食べ合わせデータベース
Since 2012.11

MARCHE
旬データベース
Since 2014.04

Crude Drug



WorldMap
世界の薬用植物
データベース
Since 2009.06

KAMPO
漢方薬、生薬
データベース
Since 2008.08

JAMU
IndonesiaHerb
データベース
Since 2009.11

Tea Pot
ハーブ
データベース
Since 2011.08

Skewered KNApSACK 串刺し検索
Since 2010.10

Biology



Metabolite
Ecology
Distribution
Since 2015.02

Biological
Activity
Natural Activity
Since 2011.08

Biological
Activity
Metabolite Activity
Since 2013.01

Picnic

Gene Annotation

Arabidopsis
Since 2008.04

Bacillus
Since 2008.05

Human
Since 2009.03

Strap

Correlation Coefficient

Arabidopsis
Since 2009.08

Bacillus

Pickaxe
Metalloprotein Database

MetalMine
Since 2009.08



Motorcycle
Metabolic Pathway

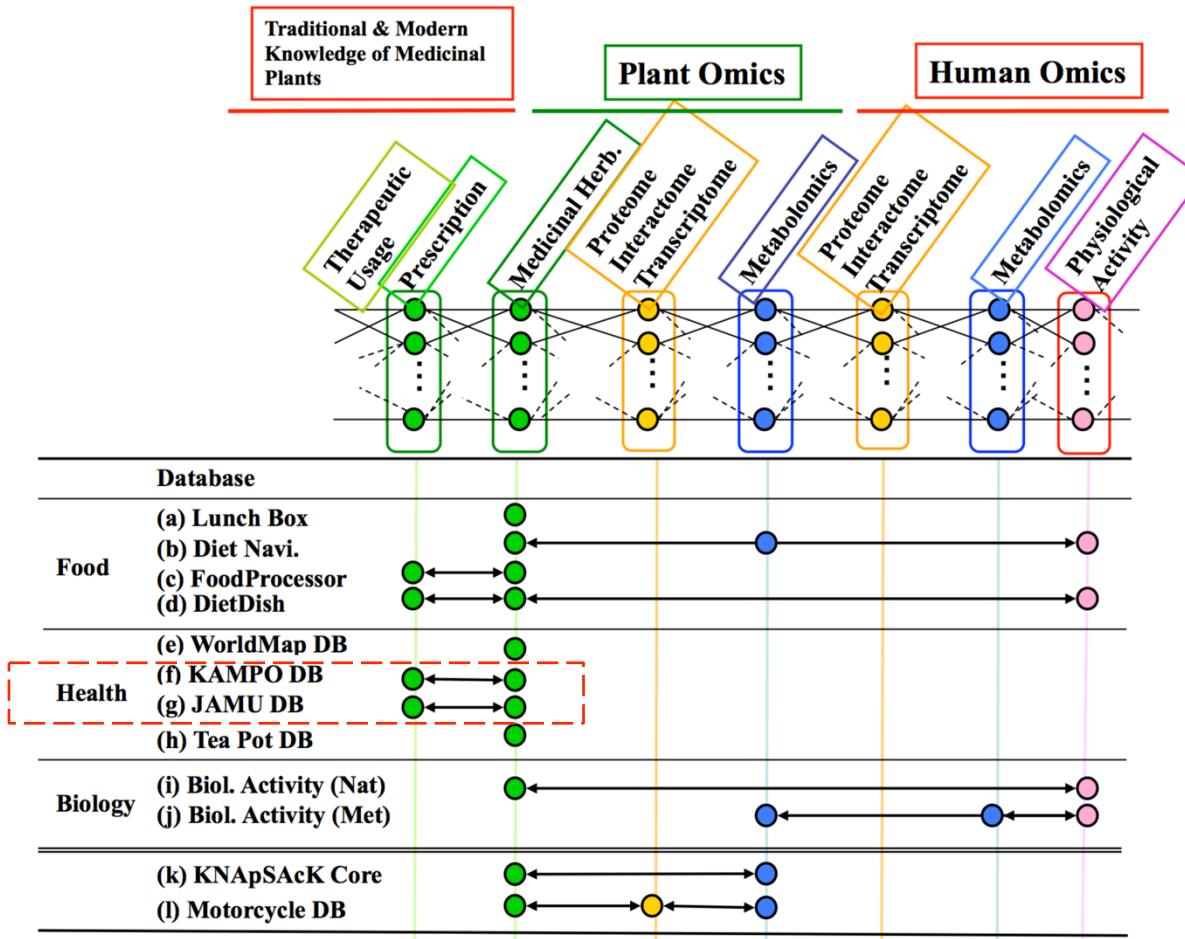
代謝データベース
Since 2011.08



Bicycle
Algae Metabolic Pathway

代謝データベース
Since 2013.09

Relationship between entities at KNApSack Family Databases



KNAPSAck Jamu



Take out
“JAMU”
of KNAPSAck



Information :

Firefox or Internet Explorer ONLY!
Plural Searches Delimiter is “ ” or CR or LF
Instruction Manual(English) [\[PDF\]](#)

Herb --> Jamu Search (Enter keyword is herbal medicine.)

Herb List

| Number of Data : 1133 | |
|-----------------------|--------------------------------|
| ok | Clear |
| Herb List | |
| ↑ | Abelmoschus moschatus Folium |
| ↑ | Abelmoschus moschatus Oleum |
| ↑ | Abies precatorius Folium |
| ↑ | Acacia sieberiana Radix |
| ↑ | Acanthopanax senticosus Cortex |
| ↑ | Achillea santolina Folium |
| ↑ | Actinidia aspera Folium |
| ↑ | Actinianthes aspera Radix |
| ↑ | Actinianthes bidentata Folium |
| ↑ | Actinianthes bidentata Radix |
| ↑ | Aconitum heterophyllum Rhizoma |
| ↑ | Aconitum calamus Rhizoma |
| ↑ | Aconitum gramineum Herba |
| ↑ | Aconitum chinense Semen |
| ↑ | Actocarpus communis Folium |
| ↑ | Aderphora stricta Radix |
| ↑ | Aegle marmelos Folium |
| ↑ | Aegle marmelos Radix |
| ↑ | Aesculus hippocastanum Semen |

Curcuma xanthorrhiza Rhizoma

Search Clear Page Clear

Jamu --> Herb Search (Enter keyword is Jamu.)

Jamu List

example :

Search Clear Page Clear



Take out
“JAMU”
of KNAPSAck



Company or Reference

Air Mancur

Jamu Name

Jamu Plek

Jamu Effect Group

Respiratory disease

Ingredient Herbs

Herb Name

Laos

Anomum cardamomum Fructus

Kapulaga

CARDAMOM

Coriandrum sativum Fructus

Ketumbar

CORIANDER

Piper nigrum Fructus

Lada Hitam

BLACK PEPPER

Piper retrofractum Fructus

Cabe java

LONG PEPPER

Zingiber officinale Rhizoma

Jahe

GINGER

Take out
“JAMU”
of KNAPSAck



INPUT WORD : Curcuma xanthorrhiza Rhizoma

| Herb Name | Herb Local Name(Indonesia) | Herb Local Name(English/Chinese) | Science Name | Position of Plants | effect |
|-------------------------------|----------------------------|----------------------------------|----------------------------|--------------------|--------|
| Curcuma xanthorrhiza R hizoma | Temu Lawak | TEMU LAWAK | Curcuma xanthorrhiza Rox b | Rhizome | |

Number of matched data : 1474

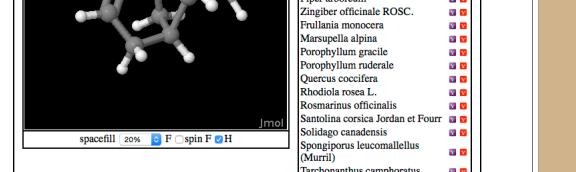
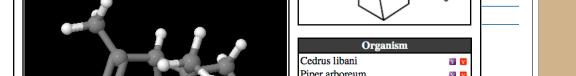
Jamu formula : Company or Reference List

| Jamu formula : Company or Reference List | |
|--|--|
| Air Mancur : Jamu Anton - Anton Muda | |
| Air Mancur : Jamu Anton Anton Tua | |
| Air Mancur : Jamu Benkwat | |
| Air Mancur : Jamu Bersalin | |
| Air Mancur : Jamu Delina Putih | |
| Air Mancur : Jamu Encok | |
| Air Mancur : Jamu Gadung Klingsir | |
| Air Mancur : Jamu Galan Param | |
| Air Mancur : Jamu Galian Putri | |
| Air Mancur : Jamu Galin Singset | |
| Air Mancur : Jamu Harum Sarl | |
| Air Mancur : Jamu Kolasom | |

| input type = organism , input word = Curcuma xanthorrhiza | |
|---|--------------|
| Number of matched data : 23 | |
| Compound ID | Metabolite |
| C00000100 | C10H18 |
| C00000095 | alpha-Pinene |
| C0000018 | beta-Pinene |
| C0000020 | gamma-Pinene |
| C0000023 | Isopinene |
| C0000063 | Myrcene |
| C0000053 | Terpinolene |

| Metabolite Information | |
|------------------------|--------------|
| Name | alpha-Pinene |
| Formula | C10H16 |
| Mw | 156.2520051 |
| CAS RN | 40-56-8 |
| C_ID | C0000095 |

| Download | |
|----------|-----------------|
| 3D | C0000095-3d.mol |



Take out
“JAMU”
of KNAPSAck

| Herb List | |
|----------------------------|--|
| Herb Name | Curcuma xanthorrhiza Rhizoma |
| Herb Name(indonesia) | Temu Lawak |
| Herb Name(English/Chinese) | TEMU LAWAK |
| Scientific Name | Curcuma xanthorrhiza Roxb. |
| Position of Plants | Rhizome |
| Effect | Rhizome: lactagog, freshener body, belly save, seizures. |
| Comment | - |
| Reference | Center Of Research And Development Of Plant Medicines And Traditional Medicine |

| Metabolite Information | |
|------------------------|--------------|
| Name | alpha-Pinene |
| Formula | C10H16 |
| Mw | 156.2520051 |
| CAS RN | 40-56-8 |
| C_ID | C0000095 |

Metabolite Information

| Name | alpha-Pinene | Species | Reference |
|---------|---|---|-----------|
| Animals | Hominidae (Feces) | Homo sapiens (Feces) | Ref |
| Fungi | Ganodermataceae | Ganoderma lucidum | Ref |
| Plants | Araceae | Santalum album | Ref |
| Plants | Ammoniaceae | Guttereria hispida | Ref |
| Plants | Araliaceae | Curcumum cyathiforme f. biserrata | Ref |
| Plants | Asteraceae | Daucus carota | Ref |
| Plants | Burseraceae | Ferula ilicifolia | Ref |
| Plants | Compositae | Notopolygon tortosa | Ref |
| Plants | Psychotriaceae | Psychotria inaequata | Ref |
| Plants | Apocynaceae | Saponaria divaricata | Ref |
| Plants | Araliaceae | Maianthemum canadense var. mandshuricum | Ref |
| Plants | Asteraceae | Arenaria serpyllifolia | Ref |
| Plants | Asteraceae | Artemisia acyphella BOISS.var.descoidea BOISS | Ref |
| Plants | Asteraceae | Artemisia capillaris | Ref |
| Plants | Asteraceae | Artemisia scoparia | Ref |
| Plants | Asteraceae | Eupatorium bukupurfolium | Ref |
| Plants | Asteraceae | Perovskia atriplicifolia | Ref |
| Plants | Asteraceae | Pithecellobium madagascariense | Ref |
| Plants | Asteraceae | Rheumatum carthamoides | Ref |
| Plants | Asteraceae | Solidago canadensis | Ref |
| Plants | Asteraceae | Tarchonanthus camphoratus | Ref |
| Plants | Caprifoliaceae/Devil's-claw/Thistle/Dipsacaceae/Linnaceae/Veilanaceae | Loniceria japonica | Ref |
| Plants | Cistaceae | Cistus albidus | Ref |
| Plants | Cistaceae | Cistus ladanifer | Ref |
| Plants | Cistaceae | Cistus creticus | Ref |
| Plants | Crociaceae | Rhodiola rosea L. | Ref |
| Plants | Crociaceae | Huperzia matthewii | Ref |

Structural formula

CH₃
H₃C
H₃C
CH₃

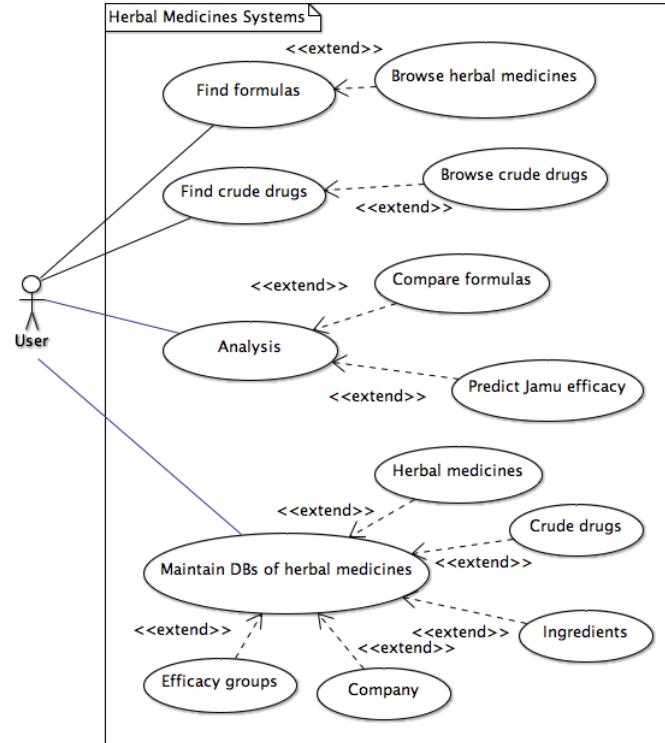
zoom in

Ref: Q201 ONE, March 2013, Volume B, Issue 2

“The Herbal Medicine Systems” (Use Case Diagram)

The Herbal Medicine Systems (HMS) consists of four features

1.  Find herbal medicine formulas based on their name or efficacy
 2.  Find crude drug based on their name or effect
 3.  Analysis
 - Compare formulas
 - Prediction of Jamu efficacy *
 4.  Maintain database of herbal medicines
-  About Herbal Medicine Systems



The use case diagram of HMS

* Wijaya, SH., Husnawati, H., Afendi, FM., Batubara, I., Darusman, LK., Altaf-Ul-Amin, M., Sato, T., Ono, N., Sugiura, T., & Kanaya, S. (2014). Supervised Clustering Based on DPCLUSO: Prediction of Plant-Disease Relations Using Jamu Formulas of KNAPSACK Database. *BioMed Research International*, 2014.

* Tanaka, Y., Wijaya, SH., Ono, N., Altaf-Ul-Amin, M., Kanaya, S. (2015). Prediction of Jamu Efficacies based on Its Ingredients using Naïve Bayes and Random Forest Classifiers. *The Third International Symposium on Temulawak and Potential Plants for Jamu*, 2015.

Herbal Medicine Systems (Class Diagram)

The database of Herbal Medicine Systems was created using data warehouse pre-processing techniques

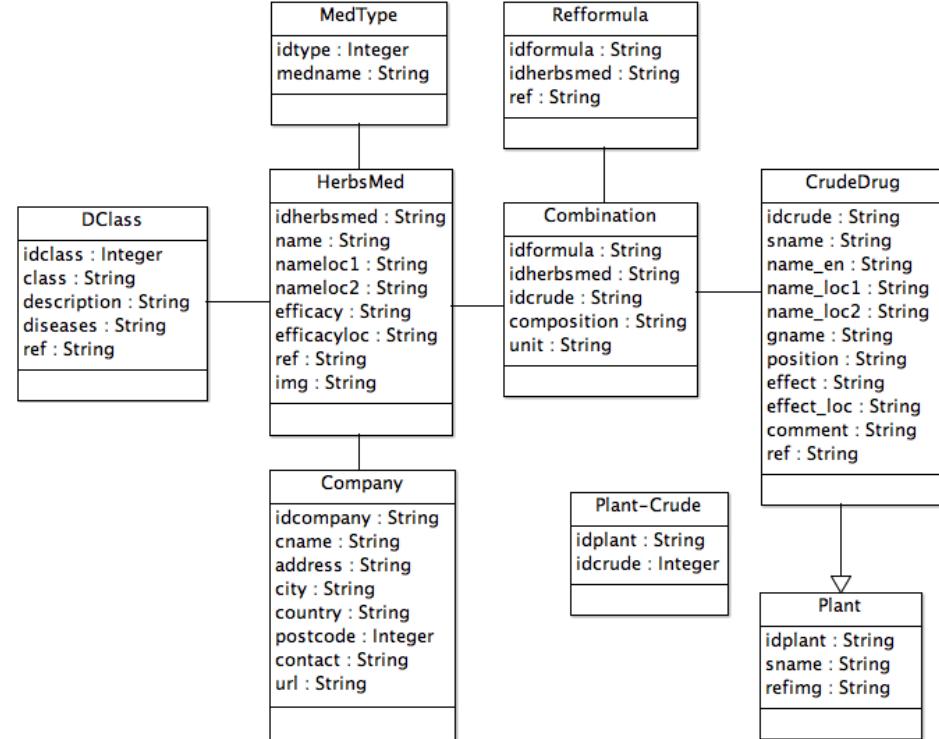


5130 Jamu
336 Kampo



Herbal Medicine
Systems

- 3027 Jamu and 234 Kampo formulas have information related to their efficacies
- In total, those formulas are composed by 1023 (777 and 246) kind of herbs



Herbal Medicine Systems

1.  Find herbal medicine formulas based on their name or efficacy
2.  Find crude drug based on their name or effect
3.  Analysis
 - Compare formulas
 - Prediction of Jamu efficacy *
4.  Maintain database of herbal medicines

 **Herbal Medicines**

 [Find Herbal Medicines](#)

Search based on efficacy or name

HerbsMed: All ▾

SEARCH

 [Herbal Medicines](#)

 [Crude Drugs](#)

 [Analysis](#)

 [Databases](#)

 [About](#)

Find herbal medicines and crude drugs

 **Herbal Medicines**

Aladina Jamu Masuk Angin

Angintik

Antangin Ginger Mocha + Madu

Antangin Herbal Tea

Antangin Jrg + Madu

Antangin PM

Antangin Plus Echinacea

Antangin Royal Jelly Ginseng

Antangin jahe mint

Browse herbal medicines and crude drugs

 **Herbal Medicines**

Amomum compactum Soland (\$00060)

Efficacy:
Fruit: cough medicine, flatulence.

Name:
Cardamom (en) / Kapulaga (loc)

Position:
Fruit (*Amomum compactum* Fructus)

Herbal medicine uses this crude drug:

- 1. J00340 - Sehat Lelaki
- 2. J00577 - Sehat Lelaki
- 3. J00619 - Pegal Linu
- 4. J00758 - Jamu Sehat Rahim
- 5. J00767 - Phu Chi
- 6. J00841 - Serbuk Instan Sangkolan
- 7. J02499 - Jamu Cipta Sehat
- 8. J02500 - Jamu Pacegin
- 9. J05114 - Galian Rapet Madura

Reference:
Center of Research And Development Of Plant Medicines And Traditional Medicine

Detail of crude drugs

 **Herbal Medicines**

 [Comparison Results](#)

Formula 1:
Jamu Formula 23 (Wasir)

Efficacy: Cure and alleviate Hemorrhoids (piles) and varicose veins

Formula 2:
Ulu Hati Bui Shu Hon

Efficacy: Treating pain in uluhati (stomach ulcer) with the symptoms: after eating uluhati felt pain, nausea, and sometimes sour dimulut, uluhati as depressed.

Crude drugs as Ingredients
Both formulas:
Abrus precatorius L.
Ocimum basilicum L

Compare recipes of herbal medicines

 **Herbal Medicines**

 [Update Databases](#)

Options: Add new data

 HERBAL MEDICINES

 FORMULAS

 CRUDE DRUGS

 FORMULAS - CRUDE DRUGS

 COMPANY

 EFFICACY GROUPS

 Herbal Medicines

 Crude Drugs

 Analysis

 Databases

 About

Maintain database of Herbal Medicine Systems



Demo

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Conclusion



- **Herbal Medicine Systems**
 - a mobile-phone application for adding and cross-searching various traditional crude drug systems
 - This application is provided as a reference and to help users get information about herbal medicines for disease treatment and maintaining health
- **HMS features:**
 - Find herbal medicines and crude drugs
 - Find crude drug based on their name or effect
 - Analysis
 - Maintain database of herbal medicines
- **Herbal Medicine Systems has been published on Google play store for free**



Herbal Medicine Systems

CSB NAIST Books & Reference

5+

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Herbal Medicines

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Search based on efficacy or name

HerbsMed: All

SEARCH

Herbal Medicines

Aladina Jamu Masuk Angin

Angintik

Antangin Ginger Mocha + Madu

Antangin Herbal Tea

Antangin Jrg + Madu

Antangin P.M.

Antangin Plus Echinacea

Antangin Royal Jelly Ginseng

Efficacy: Treating cold

Category: Pain/inflammation

Crude in this for:

1. Alstonia max (Deng Tai Ye)
2. Blumea balsamifera (Ai Na Xian)
3. Mentha arvensis (European C)
4. Myrra officinalis (Nutmeg J Pi)
5. Panax ginseng (Ginseng, On
6. Zingiber officinale (Ginger) / Jal



Herbal medicine systems is a mobile-phone application for adding and cross-searching other traditional crude drug systems, for instance TCM and Ayurveda. This apps is provided as a complete reference and to help users get information about herbal medicines for disease treatment and maintaining health.

Features:

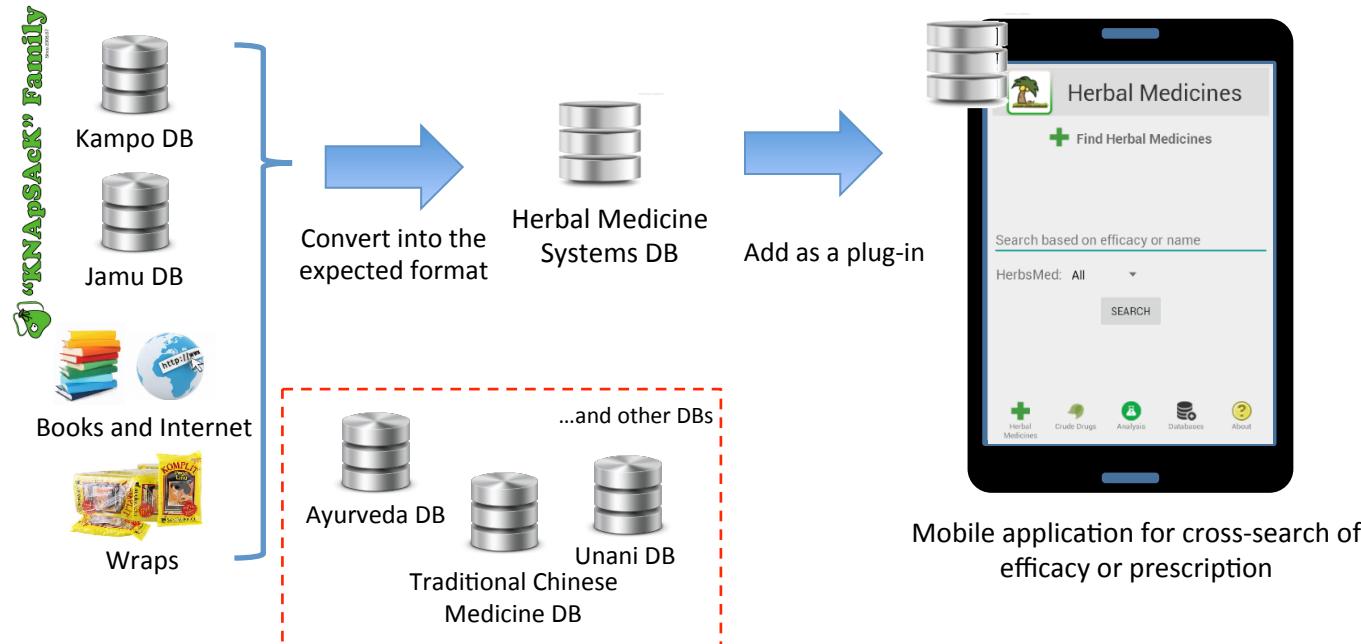
- Find herbal medicine based on their name and symptoms

Read more

The Herbal Medicine Systems ver. 1.0 was officially released at Google Play Store on Aug 23, 2015

Future works

- Batch processing for adding new crude drug systems or formulas



- Extend the herbal medicine information by including plant's metabolites
- Enrich the analysis feature by implementing other research results
- Provide KNAPSAK Family Databases for other omics studies and other researchers in PRAGMA
 - Web services for data sharing?



Thank you

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