



# Analysis of Consumer Knowledge and Needs For Herbal Information

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## ABSTRACT

Worldwide, the use of herbal medications is still growing quickly as more customers turn to these treatments for a variety of health issues. It is projected that the global market for Indonesian traditional medicinal products, of which more than half are herbal medicines, will grow. Unfortunately, there are not enough information and communication resources to support the expanding public interest in herbal therapy. The purpose of this study is to analyze consumer knowledge and needs for herbal information using a cross-sectional survey and a self-administered questionnaire as the data collection medium. The findings revealed that the consumer knowledge profile can be seen from the information sources obtained by 55 consumers, particularly Sales Promotion (30.48 percent). Consumers obtained the most information about the content (20.41 percent), usability (15.51 percent), instructions for use (13.06 percent), dosage (11.43 percent), and side effects (10.20 percent). Furthermore, 85.45 percent of consumers require special consulting services in the form of online consulting via chat (60.00 percent). Although all respondents stated that information, they received about health products from various sources was educative and easy to understand, efforts are needed to develop a system on a specific website that can contain complete information related to herbs ranging from herbal descriptions, and usability to side effects and interactions of herbs with drugs, so that consumers are actively educated to use herbs effectively and safely.

**Keywords:** Customer, Herbal Information, Knowledge, Needs.

## 1. INTRODUCTION

Herbal medicine has been widely utilized around the world for the treatment of various ailments and illness prevention prior to seeking professional aid at a hospital. The Herbal Medicine Market was valued at USD 98.60 billion in 2020 and is expected to increase at a compound annual growth rate (CAGR) of 18.8% from 2021 to 2028 [1]. This decade has clearly seen a great increase in acceptance and public interest in natural therapies in both developing and developed countries, with herbal medications now available not just in drug stores, but also in grocery stores and supermarkets [2].

The value of herbal information cannot be separated from the high market for herbal medications since information plays an important role in modern culture and helps people increase their health knowledge. Our early assessment of the availability and information needs of traditional medicine in Surabaya, Indonesia,

found that 84% of traditional medicine information was available. The majority of respondents (51.4%, N=70) reported having herbal information and getting it via the internet, primarily through search engines, health websites, and health applications [3].

This preliminary survey serves as the foundation for analysing consumer knowledge and needs for herbal information.

## 2. MATERIALS AND METHODS

This study used an observational or descriptive survey with a questionnaire as a medium to determine the level of knowledge and needs of consumers regarding herbal information on PT X products. In the questionnaire, there is an explanation of the research and the criteria of respondents who can be accepted. The online questionnaire consists of 3 parts with the following information, (1) an explanation of the aims and

objectives of the research as well as the contact of the researcher so that the respondent can be contacted if the respondent experiences problems when filling out the questionnaire; (2) information and characteristics of respondents; and (3) questions about consumer knowledge and needs for herbal information on PT X products.

Data collection and analysis were carried out in October 2021, during which a questionnaire in Google form was distributed using social media. The sample in the study followed the inclusion criteria, namely PT X customers, aged 17-45 years, with a minimum education of high school, who had worked for at least one year, lived in Surabaya for at least the last 1 year, and were active smartphone users for at least 1-2 hours per day. Data collection resulted in 55 valid responses after excluding several responses that had declined to participate and did not know herbal information on PT X's health products.

**3. RESULTS AND DISCUSSION**

Respondents in this study can be categorized by gender, age, educational level, customer experience of products from PT X, and frequency of product purchases in the last month. The demographic features of respondents are summarized in Table 1.

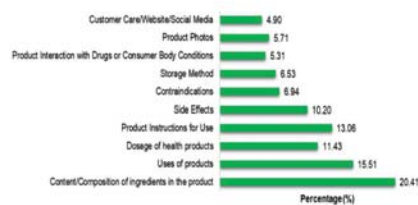
In this study, most respondents who filled out the questionnaire is male (52.73%), with the range of 36-45 years (58.18%). About 89.1% of respondents who filled out online questionnaires were those who had purchased PT X's health products.

As seen in Figure 1, on the question of what information was obtained related to health product X, both on the packaging and other information media, the majority of respondents chose the content or composition of the ingredients in the product (20.41%), usability (15.51%) and instructions for use (13.06%). Only a small proportion of respondents were able to obtain information related to product interactions with other drugs or consumer body conditions (5.31%) and customer care/website/social media information (4.90%) on the packaging and other information media. The results of a survey conducted on pharmacists in Palestine in 2017 to determine the need for herbal information included in Complementary and Alternative Medicine (CAM), stated that drug interaction is the information needed by most respondents (71.2%), while information that is only needed by a small proportion of respondents media (N=55)

**Table 1.** Sociodemographic Characteristics of Respondents (N=55)

Variable	N	Percentage (%)
<b>Sex</b>		
Male	29	52,73
Female	26	47,27
<b>TOTAL</b>	<b>55</b>	<b>100,00</b>
<b>Age</b>		
17-25 years	3	5,45
26-35 years	20	36,36
36-45 years	32	58,18
<b>TOTAL</b>	<b>55</b>	<b>100,00</b>
<b>Educational Level</b>		
Senior High School	17	30,91
Diploma	6	10,91
Bachelor	32	58,18
Magister	0	0
Doctor	0	0
<b>TOTAL</b>	<b>55</b>	<b>100,00</b>
<b>Have you ever bought a PT X product?</b>		
Yes	49	89,09
No	6	10,91
<b>TOTAL</b>	<b>55</b>	<b>100,00</b>
<b>Frequency of product purchases in the last 1 month</b>		
Infrequently	24	43,64
1 time a month	15	27,27
2-3 times a month	10	18,18
>3 times a month	0	0,00
Never buy	6	10,91
<b>TOTAL</b>	<b>55</b>	<b>100,00</b>

are suppliers (16.0%) and product uses (36.3%) [4]. This shows that the availability of information related to drug interactions with herbs that are needed by pharmacists in herbal recommendations to customer needs to be guaranteed.



**Figure 1.** Information that customers can get about health products, both in packaging and in other information

As shown in Figure 2, most respondents in this survey got their information about health products through PT X's "Sales Promotion," whereas just a minority of respondents (17.14%) got their information about products from the internet media. When compared to other sources of information, this demonstrates that the PT X sales promotion is still the most important source of information. In 2014, a study [5] showed that pharmacists obtained information on complementary and alternative medicine (CAM) primarily from pharmacy journals (69%) and the internet (60%). However, in 2017, Shraim [4] showed that the primary source of information was the internet (66.9% and specific websites (47%). According to Okuonghae and Abimbola [6] website is a 21st-century technology that provides herbal products with a virtual presence space and allows the public to view the information. Using websites, Herbs' pictorial and textual information is shared and classified. The resulting study from Shraim [4] indicates that the pattern is slightly different from that shown by the results of research related to sources of herbal information needed by consumers. It is believed that the need for the pharmacist profession for the breadth and depth of herbal information as an ingredient in providing recommendations is the source of this difference. The level of knowledge of consumers, who represent the public, is thought to be different from that of the pharmacist profession. In addition, "Social Media (WhatsApp, Instagram, Facebook, etc.)" constitutes 44.68% of the total number of respondents' channels of choice while looking up product information PT X on the internet. This is extremely like the findings of research that was carried out by Fitriani [7] who found that the

usage of social media was highly helpful in rapidly and readily spreading information to the general public in a variety of disciplines, including health.

Social media is one of the ICT technologies that may be used for information management in herbal research. Internet sub-technologies known as social media give users the ability to produce and share material, as well as take part in social networking activities. Tools for social media include Facebook, WhatsApp, LinkedIn, Twitter, and Tumblr. Sharing knowledge regarding medicinal plants is now made much simpler because of the proliferation of various social media tools. The use of social media applications makes it possible for consumers and producers of herbal goods to communicate directly with one another [6,7].

The description of customer knowledge about herbal information is shown by the presence of 92.73% of respondents who prefer to consume herbal products over doctor's medicines with the main reason being that herbal side effects are minimal (65.45%) and safe (32.73%). Consumer opinion that herbs have few side effects is often associated with a health-conscious lifestyle that avoids chemical drugs [8,9]. Consumer values and lifestyle, whether partially or simultaneously, have a significant impact on herbal medicine purchase intention. A study of consumers in Surakarta, Indonesia, found that the higher the consumer value and lifestyle orientation, the higher the purchase intention of herbal medicine; conversely, the lower the consumer value and lifestyle orientation, the lower the consumer's intention to buy herbal medicine [10].

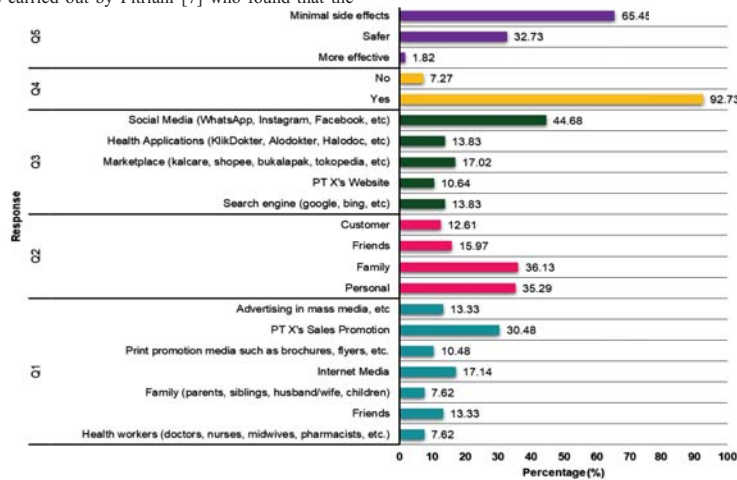


Figure 2. Consumer knowledge of herbal information (N=55)

Q1. How do you get health product information from PT X? Q2. Who is the information about the health product for? Q3. What media do you use to obtain information on PT X's health products on the internet? Q4. Do you prefer to consume herbal products over doctor's medicines? Q5. If yes, what are your reasons for consuming herbal products?

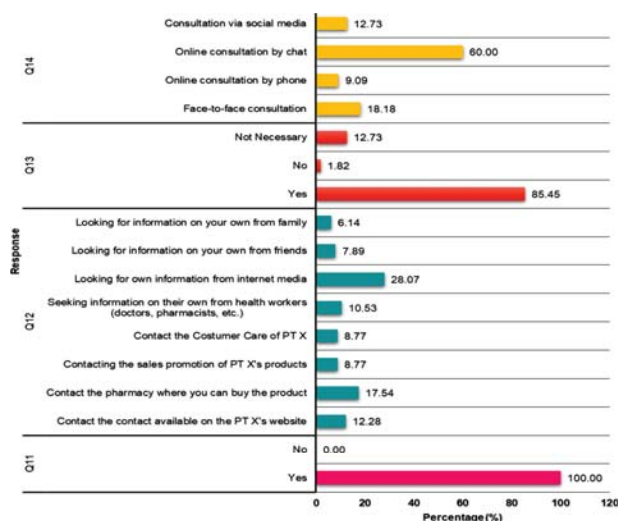


Figure 3. Consumer needs for herbal information (N=55)

Q11. Was the information you received about PT X's health products educative and easy to understand? Q12. What do you do if you need more information about the health product? Q13. In your opinion, do you need special consulting services for information related to health products? Q14. If the answer number 13 is YES, what service model do you want?

In Figure 3 all respondents stated that the information you received about PT X's health products from various sources was educative and easy to understand. If they need more information about the health product, most (28.07%) of respondents try to find information on the internet themselves, contact the pharmacy where the product was purchased (17.54%), contact person on PT X's website (12.28 %), only a few respondents (10.53%) contacted health professionals including doctors and pharmacists to obtain herbal information. This is slightly contrary to the results of the study by Issa & Basheti [11] which states that customers in Jordan preferred herbalists as their primary source of herbal medicine expertise. In Jordan, both herbalists and clients had a strong belief in the use of herbal medicines. Customers acquire knowledge mostly through herbalists, while herbalists acquire knowledge primarily via work experience.

Based on survey results about consumer needs for herbal information in Figure 3, most respondents (85.45%) need special consulting services for information related to health products, through online consultation services via Chat (60%) and "Face-to-Face Direct Consultation" (18.18%).

In terms of quality, safety, and efficacy, the widespread and growing use of herbals has created a global health challenge. This has influenced consumer knowledge and demand for herbal information.

Consumer knowledge is very influential in providing information services because the higher the knowledge possessed by consumers, the larger amount of information is needed. Whereas consumer needs for information services can be influenced by several factors which factors it can become a problem and cause the need for information is getting bigger. The need factor is one that allows consumers to seek information services and is realized in the form of action [12].

This preliminary survey can provide valuable initial information for the development of a herbal medicine information system to assist consumers and the herbal industry in obtaining all useful information about Indonesian Traditional Medicine, including not only the usability of herbal medicine but also side effects and evidence-based herbal drug interaction.

#### 4. CONCLUSION

In conclusion, the global use of herbal medications is on the rise, with a significant portion stemming from Indonesian traditional medicinal products. As the market for these products continues to expand, it becomes evident that there is a growing need for comprehensive information and communication resources to meet the increasing public interest in herbal therapy. This study aimed to address this gap by analyzing consumer

knowledge and information needs through a cross-sectional survey and a self-administered questionnaire.

#### AUTHORS' CONTRIBUTIONS

Conceptualization and methodology, O.Y.; data collecting, E.T.; data analysis, O.Y., E.T.; writing and supervision, O.Y. The published version of the work has been reviewed and approved by all authors.

#### ACKNOWLEDGMENTS

The authors like to express their gratitude to the Ministry of Research, Technology, and Higher Education of the Republic of Indonesia for financial assistance, particularly through the Matching Fund Program for O.Y. The opinions stated in this article are those of the individual writers and do not necessarily reflect those of the Republic of Indonesia's Ministry of Research, Technology, and Higher Education.

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*Moringa oleifera* Lam. (Drumstick tree) is a herbal plant commonly found in subtropical and tropical areas such as Indonesia. *Moringa* plants have been widely used because they have many pharmacological effects. In addition, due to the high consumption of *Moringa*, there still needs to be monitoring regarding...

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Indonesia is a nation characterized by a diverse array of plant species that possess notable health benefits. Among these botanical resources is the Dayak onion, scientifically known as *Eleutherine palmifolia* (L.) Merr. The Dayak Tribe – an indigenous people of Borneo's island has historically utilized...

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This review provides a comprehensive analysis of the therapeutic potential of natural products derived from mangosteen (*Garcinia mangostana* L.). Mangosteen, a tropical fruit native to Southeast Asia, has long been valued for its medicinal properties. The review focuses on the isolation and characterization...

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## Patchouli Alcohol Optimization from *Pogostemon cablin* Benth. cv. Sidikalang Leaves Using Response Surface Methodology

Mochammad Firmansyah, Feri Irwansyah, Krisyanti Budipramana, Mochammad Arbi Hadiyat, Ida Bagus Made Artadana, Popy Hartatie Hardjo

The demand for essential oils in the industrial sector continues to increase, proportional to the number of people using them. *Pogostemon cablin* popularly known as nilam in Indonesia produces patchouli oil with patchouli alcohol as the major compound. Patchouli oil has been used for a long time as perfume...

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### Proceedings Article

## Explant surface sterilization protocol for micropropagation of *Amorphophallus muelleri* Blume

Fenny Irawati, Agnes Natalia Wijaya, Anggi Manurung, Michael Anthony Thongiratama, Wina Dian Savitri, Popy Hartatie Hardjo

The success of tissue culture is greatly influenced by the explant surface sterilization technique. The presence of bacterial and fungi contamination, and the occurrence of browning on the explants can interfere with the process of culture propagation. High concentration of sterilant agents will inhibit...

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### Proceedings Article

## Utilization of Tempeh Extract as an Organic Supplement

## Alternative for Banana Tissue Culture

Alexander Willy Dimaswarabrata, Anastasia Tatik Hartanti, Listya Utami Karmawan

The addition of organic materials to tissue culture media has been known to have a positive impact on plant growth. However, a tissue culture medium utilizing organic supplements originating from Indonesia as its specialty, such as tempeh, has not been discovered. This study aims to determine the effect...

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### Proceedings Article

## Anti-Inflammatory and Mucolytic Activity Test of Ethanol Extract Fennel Leaf (*Foeniculum vulgare* Mill.)

Syifatul Lutviani, Ita Nur Anisa, Andreanus A. Soemardji

Chronic Obstructive Pulmonary Disease (COPD) is a progressive lung disease characterized by chronic bronchitis, airway thickening, and emphysema. There are several main mechanisms of COPD, namely chronic inflammatory processes in the airways, oxidative stress, and disturbances in the balance between...

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### Proceedings Article

## LFER and 3D-QSAR Analysis of Febrifugine Derivatives against *Plasmodium falciparum* FCR-3 Strain

Nur Aina, Tegar Achsendo Yuniarta, Dini Kesuma

Malaria is a serious disease caused by Plasmodium through the bite of the female Anopheles mosquito. Due to resistance to artemisin, a first-line

antimalarial, new compounds are needed. This study aims to obtain a QSAR model from febrifugine derivatives against the Plasmodium falciparum FCR-3 strain....

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#### Proceedings Article

### Natural Dyes as Photosensitizers of *Propionibacterium acnes*

Asmiyenti Djaliasrin Djalil, Aqshal Pramudya Susanto, Rizal Nandha Arisugita, Binar Asrining Dhiani, Muhammad Faris Maulidan, Irfan Zamzani

The patient's quality of life may be negatively impacted by the high prevalence of acne vulgaris among adolescents. Acne vulgaris is a skin condition in which hair follicles become clogged with dead skin cells, bacteria, and natural facial oils. It has been demonstrated that acne antibiotics raise antibacterial...

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#### Proceedings Article

### Formulation of Chewable Gummy Tablet of *Moringa oleifera* L. Leaf Extract Using Combination Kappa Carrageenan and Iota Carrageenan

Nabilaberty Prisma Gemilang, Nikmatul Ikhrom Eka Jayani, Karina Citra Rani

Moringa leaves were the most commonly used part of the Moringa plant because they were rich in nutrients. Moringa leaves extract was developed into a chewable gummy tablet to improve its acceptability. The main component of the chewable gummy tablet was a gelling agent. This study

aims to determine the...

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### Proceedings Article

## Stability and antioxidant tests of ethanol extract liposome of moringa leaves (*Moringa oleifera*)

Robert Tungadi, Teti Sutriyati Tuloli, Sri Manovita Pateda

Moringa leaf potentially has an antioxidant effect because it contains Quercetin having porsolubility in water. Liposomes as carriers of drug compounds can increase the solubility of quercetin through an entrapment system in the lipid bilayer. This study aimed to determine the stability and antioxidant...

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