

NORAINI ABDULLAH
SUHAIMI SALLEH

Factors Related to the Use of Herbal Products and Derivatives from Consumers' Perspective in Kota Kinabalu, Sabah: An Initial Study

Abstract

This initial study was done to identify consumers' inclinations and perspectives on issues regarding health and natural resources in using herbs and herbal products. Questionnaires were distributed at three different locations around Kota Kinabalu, Sabah, Malaysia to respondents of different ethnic and working groups. The respondents were required to respond to questions which probed factors such as consumers' habits and behaviours, awareness and perceptions, preferences and choices as well as influences of the mass media. The study found that factors impinging on consumers' inclinations such as product commercialisation, preferences, media influences, and job opportunities have positive impacts. The identification and property of these factors contribute to enhancement of a model for consumers development towards healthier lifestyle through increased consumption of natural and herbal products. The future application of an enhanced model which acknowledge these contributing factors would benefit planning and implementation of consumer development strategies.

Key words: *natural, herbal, model, consumer development, healthy lifestyle, and healing practices.*

INTRODUCTION

Historians had proven that man/woman had frequently used herbs in such a sophisticated way since the primitive days. Interestingly, herbs be it wild or propagated can be easily obtained and currently are being grown commercially and touted as alternative to modern medicine. According to A.H. Gilani and A. Rahman (2005), collaborations between botanists, pharmacists, doctors, and chemists were important in bio-research based on plants. Ethnopharmacology had also played a vital role in the development of conventional medicine and would do so significantly in the future. In their research, it was stated that the World Health Organisation (WHO) had indicated that three quarters of the

Noraini Abdullah is a Lecturer at the Mathematics and Finance Program in the School of Science & Technology UMS (Malaysia University of Sabah). She is contactable via noraini@ums.edu.my; and **Suhaimi Salleh** is a Senior Lecturer at the Communication Program of the School of Social Sciences UMS (Malaysia University of Sabah). His e-mail contact is suhaimi.binsalleh@gmail.com

world population depended on health remedies obtained from herbal plants. Moreover, most pharmacologists had classified herbal medicine to be under the natural product category. Accordingly, A.A. Izzo *et al.* (2004) also indicated that there is a growing global interest in alternative medicine; more so in the United States where the market for herbal health products had reached US\$ 590.9 millions.

SOME HERBS AND HERBAL PLANTS

Global communities have been using herbs widely, examples are: onions (*bawang*), turmeric (*kunyit*), fenugreek (*jintan*), lemons, and limes. Their usages have been taken for granted and some even without prior knowledge of its medicinal properties. Hence, some common herbs which are locally grown and used are the product focus in this paper; namely, they are cinnamon (*kayu manis*), garlic (*bawang putih*), and ginger (*halia*).

Cinnamon is a natural herb, was said to have originated from Sri Lanka and Southern India, but later had spread to Latin America, West India, and the Malay Archipelago which was then famous for its spice trade activities during the 16th up to the 18th centuries. Known scientifically as "*Cinnamomum*", it is in the family of Lauraceae. There are more than 300 species found in continental regions such as North America, Central America, South America, Asia, and Australia (Lemmens, Soerianegara & Wong, 1995).

According to G.D. Pamplona-Roger (2001), cinnamon is one of the oldest spice herbs in the world. As early as 2000 BC, China had found and used cinnamon and it was said to have valued like gold at that time. Its usage in herbal medicine was the oldest as stated in Chinese history since 4000 years ago and later was widely spread to other parts of the world (Qin *et al.*, 2003). During the Egyptian civilisation, cinnamon was also used to embalm corpses, while America was introduced to cinnamon since the travels of Columbus to India. The 17th and 18th centuries had seen the lucrative spice trade of cinnamon for the Dutch traders.

Cinnamon had widely been used in culinary and as food additives (Samy, Sugumaran & Lee, 2005). There are many species of cinnamon that produce oils through the process of distillation. Research had shown that the various types of cinnamon can be used for different purposes such as anti-microbial, anti-fungi, and anti-pest. An example would be *Cinnamomum iners* being used in traditional therapy for illnesses, such as to relieve fever (Lin *et al.*, 2007).

Garlic or its scientific name, *Allium Sativum*, is also one of the plant herbs which have been long and widely used in daily culinary dishes. Some areas of the Mediterranean, India and Sri Lanka, and several tropical and sub-tropical countries in Asia (Goh *et al.*, 1995), as well as Sumeria, Egypt, Israel, China, and Europe (Tesch, 2002) had used garlic traditionally as remedies. According to B.J. Tesch (2002), also history had shown that the Chinese had been using garlic to lower down their blood pressure, while the Egyptians used garlic for physical prowess, and in Europe to prevent the spread of diseases. From B. Qi *et al.* (2000), garlic was known to have contain active medicinal compositions and been used in herbal medicine thousands of years ago.

Among the active ingredients were allicin, ajoene, di-allyl sulfide, and many more besides other high sulfur contents in it (Bergner, 1996). Sulfur in garlic contains many main enzymes, such as enzyme pepsin which functions in the digestion and hormonal bodily functions, especially in the process of detoxification and immunity system. It helps in the secretion of *testosterone* (testiness) in the prostate gland of males so as to act on the fatty acids, thus influencing the blood pressure and circulation, metabolic rate, body temperature, fertility, and cell division. The aroma in garlic is due to the sulfur content (Bergner, 1996).

Ginger, or the scientific name *Zingiber Officinale* Roscoe, is in the family of *Zingiberaceae*. According to S.H. Goh *et al.* (1995), the name *Zingiber* comes from an Arabic word, *Zanjabil*, and later from Sanskrit, *Singabera* (meaning root-horn), which later gave the classical Greek word, *Zingiberi*, and finally *Zingiber* in Latin. *Zingiberaceae* is made up of 1,200 species where 1,000 of them are found in Asia. Accordingly, J. Heinerman (1998) had said that ginger has become an important horticultural commodity in South East Asia. Research by Dorai and Aggarwal had discovered that the population in the South East Asian region had lower risk in having cancers of the colon, prostate, breast, and stomach, compared to population in the West (in Rawsthorne *et al.*, 1999; Qi, 2000; Khanum, Anilakumar & Vismanathan, 2004; Artz *et al.*, 2006; and Rozian Mohd Sharif, 2007). This is due to the fact that they have incorporated ginger as part of their daily routine diet in combatting sickness and adopting a healthier lifestyle.

SOME USES OF HERBS

Cinnamomum is also known as *Cassia* or *Gui Zhi* and has been traditionally grown in Asia, even though its usage in treating ailments are different for the various tribes of Asia. It had also been used to fight back diseases. The local name for species *Cinnamomum Camphora* is *Teja Lawang*. This species was said to have originated from the Ryukyu Islands of Japan, Southern Yangtze River of China, Hainan, Taiwan, and Vietnam. The oils from the leaves, barks, and roots can be used to relieve chest pains, muscular pains, and joint cramps. In India, it is rubbed to warm up cold hands and feet. In Asia, cinnamon is also used to treat gout, rheumatic pains, and inflammation (Samy, Sugumaran & Lee, 2005). As in Indonesia, the extract from cinnamon bark is used to revitalize the body after birth and confinement; whereas in Malaysia, the root is boiled and drunk after birth. Paste made from its powder is used to treat aching joints and rheumatic pains. In Vietnam, cinnamon bark is used to relieve stomach pains and constipation (Wiart, 2002).

Besides that, cinnamon is also used to control blood sugars. A research had been done on the effects of cinnamon on insulin in mice. The results showed that the cinnamon extract not only improved insulin effectiveness but also hinders the inactive enzymes in mice and consequently, increased the breakdown of glucose (Qin *et al.*, 2003). Hence, cinnamon can be used to reduce the risks of contracting diabetes and stroke.

Cinnamon had been used in culinary, example, *Cinnamomum Burmanni* a species besides being used as a natural food additive, its aroma opens up ones appetite as well as giving many health advantages. Bread making and manufacturing of *root beer* essences and drinks are examples of some industries using this type of cinnamon (Lopez-Malo *et al.*, 2007). It also acts as an anti-bacterial agent (Matan *et al.*, 2006). The fungal growth named *Candida* can cause early deterioration but with the extract of cinnamon, its oils hinders fungal and microbial growth in food; hence, contributes to the food industry by extending the expiry shelf life for most foods.

Since the middle ages, herbal baths had been part of the medicinal treatments practised, especially around the Mediterranean region, and had been valued highly during the lesser civilisation. More so now, with the technology advancement, herbal baths can relieve muscle cramps and increase the blood circulation. Mixed aromatic herbs with perfumes is a traditional practice to alleviate many sicknesses, such as tiredness, physical, and mental lethargies as well as promoting healthy skin and hair growth and goodness. The earliest records on the therapeutic baths with aromatic herbs were found in the books in India since 1500 BC. Since then, the civilisations of Egypt, Babylon, Assyria, and Hebrew used them widely for hygiene and disease prevention; an example was Cleopatra, the Egyptian Queen between 69-30 BC, had used these baths mixed with rose petals. After bath, the Egyptians used to use oils made from cinnamon (*Cinnamomum Verum*), mint (*Mentha x Piperita*), white lotus (*Lilium Candidum*), marjoram (*Origanum Majorana*), Indian frankincense (*Boswellia Serrata*), and oils from nuts and seeds, such as almonds (*Prunus Dulcis*), olives (*Olea Europaea*), and sesame seeds (*Sesamum Indicum*) (Farid Alakbarov, 2003).

Old manuscripts have also recorded that there were about 50 species of aromatics herbs and flowers to be used from the 9th to the 14th centuries. Later, in the late 1960's, the use of aromatherapy had taken place in the United States and Europe, resulting in the popularity of herbal baths. Herbal techniques and methods had been improvised through time, and since then herbal-based medicines and cosmetics have been manufactured worldwide. Some examples are soaps, syampoops, and bath gels which contain herbs, plants, leaves, flowers, and others (Farid Alakbarov, 2003).

BENEFITS OF CONSUMING HERBS OR HERBAL PRODUCTS

Through the ages, herbal products usages and consumption as well as manufacturing have progressed remarkably. Today, processing, manufacturing, and packaging are using the latest and most modern scientific technologies.

According to Rozian Mohd Sharif (2007), the risks of contracting dangerous diseases such as diabetes mellitus, cardiovasculars, and cancers can be reduced with intake of herbal products like garlic. Garlic helps in the regulation of blood glucose that causes diabetes. Besides lowering the bad lipoprotein levels, instead it increases the good lipoprotein levels which prevents the blockage of the arteries. In other words, the risks of cardiovascular diseases like strokes

can be reduced by consistent garlic intake. Likewise, garlic intake by cancer patients is also found to have inhibited the growth and division of cancer cells in the colon, liver, kidney, oesophagus, cervix, and breasts. Ailments such as headaches, flatulence, pimples and acne, dermatitis like ring-worms, pustules and coughs can be treated cheaply at homes with garlic intake. Thus, its use in homes as remedies for these common ailments can certainly avoid costly clinical treatment. It can also be used to treat for loss of appetite since if eaten raw, helps in the production of saliva and enzymes. According to P. Bergner (1996), raw garlic can destroy dangerous bacteria in the colon directly. It can also be used for vaginal wash and treatment for hypertension of cardiovascular patients to reduce high blood pressure and for anti-inflammation (Mansoor, 2001).

Ginger is also known to have many uses in different aspects such as for remedies in the traditional medicine and are extracted for the modern medicine, as additives and flavourings in the food and drinks industries, industries of consumer products like detergents, gels and coils and many others. It can be concocted into liquid or solid forms or boiled in mixtures of both, as drinks or in food. In traditional medicine, ginger leaves are eaten to alleviate arthritic as well as stomach pains and cramps. The leaves can also be pounded into paste to relieve headaches (Samy, Sugumaran & Lee, 2005).

Treatment at a minimal cost would certainly give an economic motivation for a social and communal development. Besides, its oils being used as an anti-oxidization (Singh *et al.*, 2005), ginger also helps in absorption and digestion system to avoid flatulence, skin itchiness, small cuts, and haemorrhages (Pamplona-Roger, 2001). Most countries, especially China and India, uses fresh ginger in their everyday food preparations (Shukla & Kalra, 2006); and as food additives in drinks and menus, such as ginger-flavoured coffee and tea.

Besides being used in medicine and as additives in foods, ginger has found its niche in the manufacturing product industries such as soaps and detergents. There are various products of this category available in the market. This had shown that ginger can be used in the beauty and cosmetic industries. Mixtures of ginger with other herbs like bergamot and basil can produce aromatherapy oils that revitalizes ones' body.

FACTORS PROMOTING THE USE OF HERBAL PRODUCTS OR DERIVATIVES:

A. PRODUCT COMMERCIALISATION

Species *Cinnamomum Verum* is famous for its anti-fungal and anti-bacterial properties. Cinnamon is used in traditional medicine to treat various common ailments, such as coughs and colids (Samy, Sugumaran & Lee, 2005). In China, cinnamon barks and sticks are concocted with other herbal plants are used to treat certain cancers, high blood pressure, stomach aches, and diarrhoea. Used in most food preparations, it is also prepared in aromatherapy to relieve physical stress and tiredness (Samy, Sugumaran & Lee, 2005).

Species *Cinnamomum Iners* is used to make houses and furnitures. Its extracts is used to manufacture mosquito coils, perfumes and fragrances, plastics, glues, internal layers of tyres, kertas, paints and fibre optics. In Sarawak, Malaysia, the barks of this species is used as medicine, its oils from leaves as food flavourings and planted as ornamental plants in landscaping (Lemmens, Soerianegara & Wong, 1995).

B. PRODUCT UTILISATION

B. Lohse, J.L. Stotts and J.R. Priebe (2006) had done a research on herbal usage amongst consumers, comprising of parents or guardians in the United States. A total of 2,562 respondents were taken from a programme involving children known as the Food Supplement Programme to Women, Infants, and Children (WIC) in Kansas and Wisconsin. Samplings of this WIC project was done at random and taking into account of all the ethnic groups and geographic locations available.

Results by B. Lohse, J.L. Stotts and J.R. Priebe (2006) showed there is herbal usage amongst children, reported in 917 samples where 1,363 children of ages ranging from one week to 17.5 years (210 months). There was more herbal usage amongst Latinos children (48.4%) compared to non-Latinos (31.4%) whereas usage amongst parents were 43.4%. The mean age of herbal-products-using parents were 27.8 ± 8.32 years. Comparing the number of types of herbs used by the parents and children, it was found out that herbal usage amongst parents ranged from 1 to 27 types of herbs with mean 3.31 ± 3.52 types, wherelse amongst children, it ranged from 1 to 16 types of herbs with mean 2.03 ± 1.84 types. Common herbs used by the children were aloe vera, garlic, mint, lavender, berries, ginger dan lemons. Herbs used by their parents were aloe vera, garlic, mint, ginseng, berries, ginger, lavender, ginkgo, tea leaves, limes and cinnamon. Cinnamon and limes were specially used by nearly all the Latinos parents as therapeutic remedies (Lohse, Stotts & Priebe, 2006).

C. CONSUMERS ATTITUDE AND PREFERENCES

M.F. Chen (2007) found that food preferences by consumers exhibit a complex function affected by several factors. The food preferences factors comprise of consumers choices such as preferences, smells, and appearances of the foods themselves. Moreover, the choices were also influenced by effects of promotions, environment, and social factors. Research was done to identify the existence of relationships between the consumers' food preferences, reasons of food choices and buying them, and the consumers' personalities. Moderated Regressions Analysis (MRA) was carried out to study these relationships.

M.F. Chen (2007) also studied the consumers' food trends in Taiwan using a number of hypotheses, showing the differences in the amount of purchases by consumers. TPB (*Theory of Planned Behavior*) model was utilised in analysing food preferences of the consumers. The observation also determined whether consumers' attitudes toward organic food choices and amount of purchases

were influenced by the degree of differences of the foods and the personalities of the consumers.

Regression analysis was performed to study every dimensional potentials on food choices. With the empirical model obtained, efforts in improving institutions' and corporations' policies and practices, whether governmental or otherwise, organic food farming can be expanded to further the advancement of the organic sector in Taiwanese food industry (Chen, 2007).

RESEARCH METHOD AND DATA ANALYSES

The data discussed in this paper is taken from questionnaires administered to respondents in three different areas around Kota Kinabalu, Sabah, Malaysia. To measure consistency or reliability of a test subject, the Alpha Cronbach value has to be taken into account. The range of the Alpha Cronbach value which stands between zero to one ($0 \leq \alpha \leq 1$), where a value nearing to one would show a higher degree of consistency. If the Alpha Cronbach value surpassed over 0.6, this meant that the data collected from the questionnaire would be both consistent and reliable.

Factors observed of each selection of herbs: Cinnamon (*Kayu Manis*-KM), Garlic (*Bawang Putih*-BP), and Ginger (*Halia*-H) are preference, use and habit, media endorsement, influential factor, level of consumers' knowledge and product commercialisation. The Alpha Cronbach values for the whole encompassing factors were 0.669 (KM), 0.657 (BP), and 0.621 (H). Therefore, overall collective data in the research were consistent and reliable.

CONSUMERS' DEMOGRAPHIC FACTORS

Demographic factors studied were age, sex, faith/religion, marital status and level of education, area of living and income. The highest number of respondents were indigenous Sabahans (43%), followed by Malays (39%), Chinese (13%), Indians (3%), and indigenous Sarawakians (2%). On average most of respondents were Muslims (70.4%), while the rest were Christians (23%), with Buddhists and others made up the smallest percentage (6.6%).

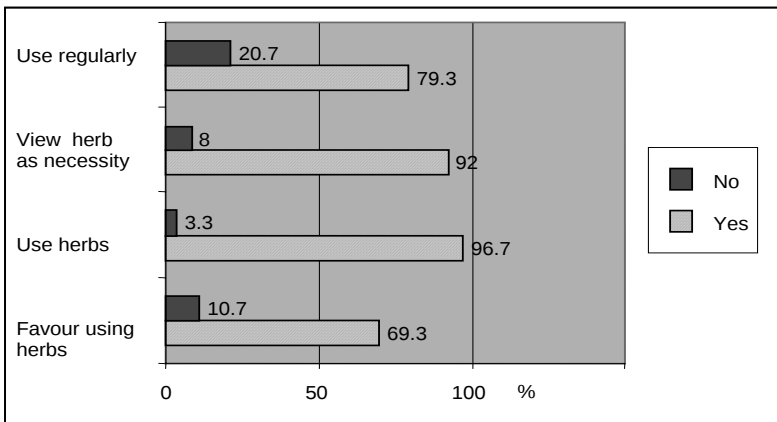
The respondents highest level of formal education was at Bachelor. However, most of the respondents had SPM (*Sijil Pelajaran Malaysia*) or diploma level qualifications. The frequency bar charts showed the correlation of level of education and occupation of the respondents and the scatter diagram of salary for each area studied. Most respondents have household income between RM 500 – RM 3,000. The distributions of where the respondents live showed that the majority resides in urban/urbanised areas (68.9%) close to the respondents' dwelling while the rest settled in homes located in rural areas (31.1%).

CONSUMERS BEHAVIOUR:

This study examined factors regarding consumer behaviour such as the use of herbs in cooking, for health, well-being and beauty treatment as well as as medication. The frequencies of usages and preferences were also investigated.

The following chart (figure 1) shows consumers' behaviour related the use of the herb (garlic) followed by how it is being used. Around 96.7% use the herb (garlic) and only 69.3% prefer it, 92% see it as a necessity where as 79.3% uses it frequently. Almost all of the respondents use the herb, despite that only some prefer them. Herbs (cinnamon, garlic, ginger) were seen as a kitchen necessity, in particular, their culinary uses were the main reason compared to other uses. The use of herbs in cooking recorded the highest percentage (98.7%) compared to its use in health and well-being (18%), beauty (7.3%) and medicine (24.7%). Even though the percentages of the respondents that used garlic for instance, as an alternative herbal remedy were low but most respondents knew the benefits contained of garlic.

Figure 1:
Usage of Herbs of Consumers in Kota Kinabalu, Sabah, Malaysia



A. CONSUMERS PREFERENCES

This factor was studied to observe how consumers' preferences in using herbs (like garlic) in their daily lives. Questions on preferred ways of preparations in dishes and at what time the herb (garlic) was used, along with the respondents' attitudes towards the dish if the herb (garlic) was not used was incorporated in the questionnaires. Findings indicated as much as 94% of the respondents preferred garlic being cooked over eating it raw (12%), in powder form (5.3%), capsules (6%), and crushed (8%). Garlic was preferably used in cooking at lunch-time (70%) and dinner-time (77.3%) compared to breakfast-time (40.7%) and evening tea-time (40%). Despite of the percentage of users preferring the herb (garlic) in cooking was high (94%), only 78% considered their meals were incomplete without its compliment. This was because preferring to use a herb (such as garlic) is not equivalent to favouring its usage compulsively in every cooking.

B. INFLUENCES ON CONSUMERS' PERCEPTION OF HERBS

This factor looked at the elements that influenced the way the respondents used the herbs. The posed questions comprised of determined influencing factors, availability of the herb/product, and the convenience of its use. The analysis of the herb's obtainability with regards to pricing whether in the supermarkets, the groceries, *tamu* (farmers' market) or even self-grown were also taken into consideration.

It was discovered that most of the respondents preferred the usage of the herb (garlic) was because of its "pleasant" flavour (72.7%) compared to other factors i.e. convenience in the usage and obtainability, affordability, and consumers' confidence. Price was not a very strong factor influencing consumer demand for the herb (garlic) but the majority of respondents (96.7%) stated that they considered the price of garlic was affordable. The highest percentage of responses taken on the herbs were at the supermarkets, followed by the groceries, *tamu* (farmers market), and self-grown users. The highest percentage where sources referred to by the respondents were: family traditions (54%), followed by mass media (40.7%), health books (35.3%), and lastly friends and neighbours (22.7%).

C. AWARENESS OF THE BENEFITS OF HERBAL PRODUCTS

Consumers' awareness about the benefits of using herbs were examined by looking at answers given to questions about use and effectiveness of herbs in alternative medicine for treating ailments. Most of the responses were positive, whereby the consumers agreed and were confident in the use of herbs (like garlic) in treating such ailments (mean: 3.97; mode: 4), practiced and believed in the treatment's effectiveness (mean: 3.26; mode: 4). However, most were unsure in consulting a doctor prior to treatment using herbs such as garlic or garlic-based products (mean: 3.17; mode: 3).

OTHER FACTORS:

A. PERCEPTION OF ROLE OF THE MEDIA

The media plays an important role in passing information to the public. The question is have they (the media) played their role in sharing and imparting the understanding about the benefits of a healthy lifestyle, such as herbal usages to the society? A selection of questions requires the respondents to rate the media on a likert scale of 1 to 5. Most respondents agreed with the importance of the media and its role in conveying the beneficial uses of herbs to them (mean: 3.89; mode: 4), but they disagreed with the statements that the mass media frequently airs programmes of the "health" genre (mean: 2.45; mode: 2), and that government-run media have played a large role (mean: 3.33; mode: 4) in the promoting herbal products.

Respondents also disagreed with the statement that privately owned media corporation showed more interest in herbal uses than the government-run media (mean: 2.81; mode: 2). However, the respondents showed a high

level of confidence in the information about health and healthy-living shared through the media (mean: 3.57; mode: 4), and the frequency of herbal product usage increases if advertisement are often displayed (mean: 3.49; mode: 4). The printed-media are also perceived to have played a greater role compared to the electronic-media (mean: 3.61; mode: 4).

B. COMMERCIALISATION

Questions about the commercialisation of herbs and herbal products looked at the respondents' views of their potentials and suitability to be commercialised and whether its significance would be well-recognised by the society, especially by the younger generation.

It turned out that the respondents felt and believed that the current industries based on herbal products have the potentials to be expanded and developed (mean: 3.89; mode: 4), and have a promising future (mean: 4.09; mode: 4). Given the chance to invest, respondents were interested in investing for the research and development (R&D) in product commercialisation (mean: 3.41; mode: 4) compared to developing plantations/manufacturing the product (mean: 3.22; mode: 3).

The respondents nevertheless believed that mass plantation of the herbs can generate job opportunities for remote communities (mean: 4.05; mode: 4), with the younger generation given much notice towards herbs and herbal health products (mean: 4.21; mode: 4). Respondents' also indicated their preferences to buying herbal products (mean: 3.59; mode: 4) and their positive attitudes concerning its suitability for use in today's current lifestyle (mean: 4.04; mode: 4).

CONCLUSION

Descriptive analyses attempted above showed that most of the respondents used herbs daily, albeit in a minimal amount. The popular usages were in their cooking, recording a percentage high of 98.7% even though some were discomfort with it due to its smell or taste. From this, about 96.7% uses them at home and thought that they were a necessity (92%). Respondents knew about herbal usages as alternative medicine for certain ailments i.e. this seems to be common knowledge beside the common use in cooking and culinary. The respondents also supported the statements that stated that the mass media do play their role in imparting knowledge on herbs through the print and electronic media.

Concerning commercialisation, respondents agreed that herbs can should be commercialised in a wider scale due to their perceived benefits. Efforts towards this goal are to be realised by encouraging herbal plantations which in turn would generate job opportunities to the local communities. This will lead to development and social transformation of the communities i.e. which come about through planned and guided societal and behavioural development projects.

Many perceive herbs as one of nature's gifts and can be safely utilised. Herbs have become an accepted part of our life and current societal trend is inclined towards better and healthier lifestyles based on the use of natural products, including herbs and herbal derivatives. It also perceived that ventures into nature-friendly and natural products (including consumables) will generate economic benefits which will attract further investments, commercialisation and industries exploiting herbs. As the next stage of this study, factors analysis will be undertaken to identify which of the above factors is/are most significant.

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