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The Expanding Market for Herbal, Medicinal and Aromatic Plants In Nigeria and the International Scene

1*, Oguntade AE¹, Ajibefun IA¹ ² and Ikuemonisan ES¹ ¹Department of Agricultural and Resource Economics, School of Agriculture & Agricultural Technology, The Federal University of Technology, Akure, Nigeria ²Department of Agricultural Technology, Rufus Giwa Polytechnic, Owo, Ondo State, Nigeria

Abstract

Herbal, medicinal and aromatic plants (HMAP) are popular sources of materials used in alternative medicine, new drugs and other products used for health care. The trade in HMAP, especially medicinal plants (MP), is expanding into new market segments whether as herbal components of health foods or preventative medicines. They are processed into varying products which address similar diseases to which over-the-counter (OTC) medications are applied. This paper attempts a review of the global market for HMAP products focusing on product identification and classification, size and scope of the market, standards and regulations and key players in the global trade. Despite the problem encountered in classifying some traditional products of MP, fortified foods and dietary supplements as "food supplements" or "phyto-medicines," one popular basis for classification of HMAP products is the purpose of use. Another classification used when considering export of HMAP products is the Harmonized Commodity Description and Coding (HCDC) system which uses an internationally standardized tariff nomenclature for traded commodities. The market for HMAP products is a relatively young, emerging and small one in Nigeria and there is difficulty in establishing for the market, a reasonable monetary value. The Nigerian HMAP product market is dichotomized into two distinct categories of suppliers; local producers and those distributing imported products. While local producers offer products claimed to have the potency to treat some disease conditions addressed by OTC drugs, distributors of imported HMAP products usually market dietary supplements. At the global level also, there is a small but growing niche market for HMAP products which was valued at about USD13 billion in 2010. In both Nigeria and the global scene, there is the tendency for the market for HMAP products to continue to grow due to increasing consumer preference for natural, healthy, sustainably produced and fairly traded products over synthetic ones. Even though standards and regulations for HMAP products market are still not fully developed, they have been established and are operational in countries such as Canada, China, Nigeria and USA. A significant and commendable stride is being made by the European Union in establishing standards and regulations governing the market for HMAP products. These standards and regulations encompass good manufacturing practice relating to medicinal products which are meant especially for human and veterinary use.

Keywords: Herbs; Medicinal plants; Herbal products; Classification; Market; Sales, Nigeria; Global scene

Introduction

Plants produce over 10,000 different compounds primarily used to protect themselves against attacks by parasites, pathogens and predators. A good proportion of these compounds could be potentially useful in the pharmaceutical industry [1,2]. Thus, plants represent tremendous "pharmaceutical laboratory." Herbal medicine, sometime also called botanical medicine, uses herbs to make products more recently and widely accepted as herbal medicinal products which are used for therapeutic or medicinal purposes. According to WHO (1998a) [3], herbal medicines are finished, labelled medicinal products that contain as active ingredients, above ground or underground parts of plants or other plant materials, or combinations thereof, whether in the crude state or as plant preparations. The plant materials referred to above include juices, gums, resins, fatty oils, essential oils and any other substances of this nature. Herbal medicines may contain excipients in addition to the active ingredients (WHO, 1991) [4]. Herbal medicine predates the other forms of health care used by humans and it has evolved alongside development of modern civilization [5]. Medicines which contain plant materials that are combined with chemically identifiable active substances, including chemically defined isolated plant constituents are not usually regarded as herbal medicines (WHO, 1991) [4]. Herbal medicines in most developing countries have played a central role in health care since time immemorial [6]. Primitive humans see the wide varieties of plants available for their use as a blessing from nature. They collected undocumented information on herbs and evolved specific herbal pharmacopoeias. During the first half of the 20th century, most of the pharmacopoeias contained drugs derived from the herbal practices of native peoples. In modern time, many commonly used drugs are made from herbal materials [5]. WHO [7] notes that about 75.0% of drugs synthesized from plants correlates directly with their traditional uses in native cultures. Plants regarded as medicinal plants (MPs) are those which have substances capable of being used for therapeutic purposes in one or more organs of their bodies. Such plants also contain inactive substances which become active when chemically manipulated during the process of manufacturing chemical medicines [8]. Aromatic plants, in comparison with MPs, are characterized by strong smell or fragrance and majority of them also possess active ingredients used in combating diseases [1]. Ogunlela [9] opined that a good number of plant species

*Corresponding author: Mafimisebi TE, Department of Agricultural and Resource Economics, School of Agriculture & Agricultural Technology, The Federal University of Technology, Akure, Nigeria, Tel. 234-803-471-2086; E-mail: temafis@yahoo.com

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have various medicinal uses to the extent that if there is a plant that has no known medicinal use for now, it is simply that its application in medicine has yet to be discovered. In all indigenous or alternative systems of medicine, MPs are indispensable elements. They are the basis of Ayurvedic, Homeopathic, Naturopathic, Oriental, Native American and Indian medicines. This is most likely the reason why MPs have come to occupy an important place in various communities, especially in the low income geographies such as Nigeria. The curative effects of MPs are vitally important in developing countries with inadequate health facilities or where citizens have limited purchasing power to afford orthodox health care [9,10].

Traditional medicine (TM) based on the use of MPs thrive on recipes, concepts and methods used for health management. TM has survived mostly through raw materials derived from MPs, which are the major components of products used for alternative medicine, newly introduced drugs and health care products [11]. Never the less, the use of MPs is still sometimes associated with superstition and witchcraft hence it is often rejected by some people in favour of orthodox or western medicine [10,12,13]. Experts in natural medicine development in Nigeria are of the opinion that secrecy and mysticism are the greatest challenges against the development of traditional/herbal medicine in Nigeria [13,14].

The use of plants by humans for preventive and curative health management is as old as history. Estimates that are recent reveal that more than 9,000 plants have active substances capable of being used for known medical abnormalities in various cultures and countries [15]. MPs are popularly used by household members and over 80% of the world's population (4.3 billion people) depends on medicines derived from MPs to provide solution to their health problems [7]. The indispensability of MPs was established in the last decade owing to increasing interest in natural materials by peoples in advanced countries. The increased interest has resulted from the recognition that technology alone is inadequate to meet the world's health care needs [16]. Traditional herbal remedies are staging a comeback as popular alternatives to chemical medicines in many developed countries. The demand for high quality, certified, and/or organic herbal products is increasing with one of the consequences being unsustainable harvesting of MPs and other forest products [16-18].

Therefore, it goes beyond presumption that globally, there is increased interest in alternative health products to maintain or improve health in many world geographies. Products of herbal, aromatic and medicinal plants (HMAPs) are, as a result of growing interest by people in alternative health products, penetrating new market segments as herbal components of health foods and preventative medicines, under various trade names. A variety of products including tablets, capsules, teas, tinctures, creams, oils and liquids emanate from processing of HMAPs. These products are capable of addressing abnormal physiological conditions as over-the-counter medications which include, among others, laxatives, weight-loss remedies, immune system boosters, anti-aging remedies, anti-anxiety, anti-stress and sexual performance aids [19].

This paper attempts a review of the global market for products derived from HMAPs focusing on product identification and classification, the size and scope of the market, major players and standards and regulations in the market.

Classification of Hmap Products

Herbal medicines have two special characteristics which differentiate them from chemical medicines. These are use of crude

herbs and prolonged usage. It is common for one herb to contain a variety of natural constituents and when herbs are combined, the number of natural constituents becomes higher. From experience, it has been shown that the long-term use of whole MPs and their extracts is beneficial owing to possible synergistic effects of the different constituents. Regrettably, research on whole plants is far-fetched because the drug approval process does not allow for undifferentiated mixtures of natural chemicals since it is difficult to ascertain the collective function. Isolating the active ingredients from each herb would be immensely time-consuming with great cost implications, and is almost impossible in the case of preparations [20].

Some of the several attempts to classify herbal medicines are reviewed in this paper. Tiwari [21], on the basis of utilization, classified MPs and herbal plant products into those used by herbal patricians; those used in the formulation of different Ayurvedic medicaments; those used for making herbal medicines; those used in synthetic medicinal formulation; those that are used for extraction of active moiety and those used in non-pharmaceutical industries.

According to Anton [22], there are difficulties in classifying some traditional medicines, fortified foods (foods to which minerals, vitamins and botanical extracts have been added) and dietary supplements as "food supplements" or "phyto-medicines." He posited that many of the food supplements are presented in such a way that people may take them for "phyto-medicines" with the consequence that the applicable regulations could be erroneously skipped.

Of the 250,000 higher plant species on earth, more than 80,000 species have medicinal value attributed to them while around 5000 species have been credited with specific therapeutic value [23]. They are sorted according to the part of plant used, habit, habitat, therapeutic value etc, apart from the commonly applied botanical classification [24]. However, the most comprehensive and scientifically approved classification is the botanical classification. In the botanical classification, the various MPs are grouped according to their Class, Series, Order, Family, Genus and Species.

Another known classification is that of European Society's Cooperative of Phyto-therapy (ESCOP). Their classification of herbal plants is premised on quality and therapeutic application. They are therefore classified into three categories: Those that are subjected to more intense controlled fall into the category of prescription drugs which include injectable phyto-medicines and medicines used in the treatment of life-threatening ailments. Grouped in the second category are OTC phyto-medicines which are like American OTC drugs. Traditional herbal medicines constitute the third category and are products which though not subjected to extensive clinical testing are regarded being safe to use based on historical use without fatalities. The European Economic Community (EEC) guidelines are based on the principles of the WHO's Guidelines for the Assessment of Herbal Medicines [4].

A more relevant classification when considering the export of HMAP products is the Harmonized Commodity Description and Coding (HCDC) system of tariff nomenclature. The HCDC is an internationally standardized system of names and numbers for classifying traded products developed and maintained by the World Custom Organization. These are internationally agreed codes for the purpose of custom declaration. Based on the HCDC system, HMAP products could fall into:

HS Code 9.10: Spices, which include ginger, saffron, turmeric (curcuma), thyme, bay leaves, curry and other spices.

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HS Code 12.11: Plants and plant parts (including seeds and fruits), of the type used as raw materials for making perfumes and drugs or for manufacture of insecticides, fungicides or similar purposes. They can be used in the fresh or dried states and may be cut, crushed, powdered or used as whole plants. Examples of plant materials in this category include liquorized roots, Ginseng roots, Coca leaf and Poppy straw.

HS Code 33.1 Essential oils which may be terpeneless or not and this include concrete and absolute resinoids; extracted oleoresins; concentrates of essential oils in fats, in fixed oils, in waxes or the like. They can be processed through effleurage or maceration of terpenic by-products; aqueous distillates and aqueous solutions of essential oils. The plants from which essential oils can be derived include bergamot, orange, lemon, lime, geranium, jasmine, lavender, eucalyptus and peppermint (*Mentha piperita*) among others.

Size, Scope and Players in the Market for Hmap Products

Trade in MPs remains largely unregulated in most geography in the world. Lack of species-specific records at national and international levels and practice of grouping fresh and dried MPs under one broad category further complicate the problem. Then again, there is insufficient information on sources of demand, dynamics of MP trade and supply channels [5]. Adequate information gathered on the major user groups and international trends in demand and supply will help the developing countries because they have rich resources of biodiversity to benefit from the present state. The section focuses on the review of the size and scope of the market for HMAP products and the stakeholders involved in various nodes of the value chain.

The Local Market

In Africa, the market for products of HMAP has yet to be characterized by a beehive of marketing activities. This low ebb of activities is perhaps responsible for the low income accruable from the business in the developing countries. The fact that data on the contribution which Nigeria makes to the global herbal market is sparse probably corroborates the minimal contribution the country is making to the global market [25]. It is difficult to put a reasonable monetary valuation on the market for HMAP products in Nigeria. The market is young, emerging and characterized by small size. There are two identifiable classes of suppliers operating in the market; namely the local producers and those who distribute imported products. Each local producer usually offers a set of products, which are claimed to have the potency to address some of the conditions that the OTC drugs address. The distributors of imported HMAP products usually market commodities that are defined mostly as dietary supplements. Most of the marketers of these products are concentrated in the Southwest and Southeast geo-political zones of Nigeria. However, owing to the abundant natural base for HMAPs in the country, the market is believed to have potentials for expansion to attract more marketing activities and huge income for individual market participants and the nation in the future [25]. The Nigeria Natural Medicine Development Agency (NNMDA) is believed to be doing much to develop herbal medicine.

Region	1991-92	1993-98
EU	5	8
Rest of Europe	8	12
SE Asia	12	12
Japan	15	15
South Asia	15	15

 Table 1: Percentage Regional Growth Rates in Natural Medicines Market (1991-98). Source: WHO (1998a).
 Going by estimated monetary valuation, the production of orthodox medicine in the world is skewed geographically as more than 90 per cent of global production takes place in a few advanced countries [3].

Therefore, the effort of NNMDA is no doubt hinged on the fact that the annual earnings from the global herbal market is currently about USD160 billion. It is on this premise that the NNMDA has made aggressive attempt to develop African traditional and herbal medicine through screening of MPs and documenting their active ingredients and potentials for herbal medicine. Therefore, the sense of urgency and fast moves in standardizing herbal products to curb the current high level importation and consumption of chemical medicines at prohibitive costs promises a ray of hope.

The International Market

From the available trade data, it can be said that the global market for MPs is very large. According to the International Trade Centre, in 1967, starting plant materials used in the pharmaceutical and cosmetics industry was valued at USD 52.9 million. By 1971, this amount has increased to a total value of USD 71.2 million, which then steadily grew by approximately 5-7% through to the mid-1980s (CRPA, 2000). World Wide Fund for Nature reported that the total import of vegetable materials used in pharmacy by the European Economic Community was 80,738 tons in 1980 (Planning Commission, 2000). Of this volume of plant materials, India supplied 10,055 tons of plants and 14 tons of vegetable alkaloids and their derivatives, making it to occupy the leading position among suppliers. The fact that a lot of companies are participating in the market for HMAP products is sufficient evidence that the market is gaining strength and increasing in importance. By 1990, about 223 major companies were conducting research to detect and isolate active ingredients in plants and the ailments they cure. About 50 per cent of these companies are located in the United States [26]. In the same year, herbal medicines were being marketed by more than 2000 European companies, with 30% making a turnover higher than USD 20 million annually. Reports show that expenditure in the United States on HMAP products or unorthodox therapies was USD 13.7 billion dollars during the same year Table 1 [27].

An increasing number of people in the advanced countries now use alternative medicines. For instance, results from a national telephone survey in 1993 indicated that 33 per cent of Americans has at one time or the other used unconventional medical therapies. It was reported in another survey which was carried out in 1994 that 6 out of 10 US doctors had at one time or the other referred patients to those practising alternative medicine. As a response to increased use of alternative therapies, the well known prestigious allopathic medicine institutions have come to realize their importance in health care. In developing countries, TM, based on traditional beliefs and cultural practices, is a very important aspect of health care delivery [28]. The practice of TM is widespread in Asia and Africa. In China, traditional medicines constitute about 40% of total medicines consumed. In Japan, the demand for HMAP products is higher than demand for chemical medicines [11]. As at 2002, the worldwide market for pharmaceutical (medicinal and vegetable saps and extracts, and vegetable alkaloids) had a monetary value of about USD 8 billion attributed to it. The markets for spices and herbs, on the one hand and that of cosmetics, on the other, were estimated at USD 3 billion and USD 1.5 billion, respectively [29].

There is the tendency for the market for MPs and other natural products to continue to grow. For example, the global market for nutraceuticals; comprising dietary and meal supplements, as well as Citation: Mafimisebi TE, Oguntade AE, Ajibefun IA, Mafimisebi OE, Ikuemonisan ES (2013) The Expanding Market for Herbal, Medicinal and Aromatic Plants In Nigeria and the International Scene . Med Aromat Plants 2: 144. doi: 10.4172/2167-0412.1000144

specialty products, is estimated to be about USD 60 billion annually. It is expected that the demand for HMAP products will increase every year due to changes in consumer preference in favour of products that are natural, healthy, sustainably produced and fairly traded over synthetic products. The total revenue from the sale of organic and natural products was estimated at about USD 100 billion by 2008 at an annual growth rate of 20-30% [30]. Global market for herbal medicines was estimated at USD 12.4 billion in 1994, increasing to USD 19.6 billion in 1999 [31]. Europe leads the world market with an impressive figure of USD 7 billion, followed by Asia, North America and Japan. The retail level sales for Latin America and Eastern Europe was USD 600 million and USD 400 million, respectively. The share of Africa and Middle East together, and rest of the world is about USD 200 million each [31].

The herbal medicine market in Europe is a diversified and well documented one. In Europe, both licensed and unlicensed herbal products are on sale. Reliable estimates of turnover for unlicensed herbal products are difficult to give compared with regulated licensed products. However, from the point of view of both the dietary supplements [32] and OTC drugs [33], the market for HMAP products is considered one of the leading sectors in Europe. In 1994, the annual turnover from the sale of OTC herbal medicines amounted to USD 6 billion which increased to USD 7.5 billion, growing at a rate of between 10 to 15 per cent per annum in 1997. The sales volume of the European market for licensed herbal medicines was estimated at higher than USD 475 million in 1997 with three ginkgo (Ginkgo biloba) products attracting the highest sales volume. There has been a drop in the sale of ginkgo products in Germany, one of the most developed herbal markets, in the last 10 years (sales dropped from 9.9 million in 1993 to 8.5 million in 1997). Conversely, some other herbs witnessed increased sales. An example is St. John's wort (Hypericum perforatum) which saw sharp sales increases from 2.6 to 8.5 million between 1993 and 1997 [34]. The leading herbal products recording the highest sales were derived from ginkgo, ginseng, garlic, St. John's wort, evening primrose and Echinacea [5].

The stability in the herbal markets within Europe has helped to define the intent of Europe to continue to take the leading role in the global herbal market. Germany is the market leader with sales in the order of USD 3.5 billion, followed by France, Italy, the UK, Spain, Scandinavia and the Netherlands [5]. Germany accounts for 50% of the sales recorded in the European market and its consumption per person of USD 42.9 is about ten times the value for any other European country. However, despite this feat of well defined market structure with high volume of sales, most of the herbs and spices are still being exported by developing countries. Top exporting countries for herbs and spices include Indonesia, India, China, Madagascar, Sri Lanka, Guatemala and Iran Islamic Republic. The leading exporters of essential oils from the developing countries include India, Haiti, Egypt, China, Argentina, Mexico, Peru, Indonesia, Cuba and Tunisia. The leading importers of essential oils in the European Union are France, United Kingdom and Germany. The United States was reported to be the highest user of essential oils, flavour and fragrance. The market grew to about USD 454 million in 2001 [30]. Some countries are both significant importers and exporters of HMAP products. For example, Canadian imports of HMAP products ranged between 42 million and 48 million Canadian dollars annually between 1998 and 2007. The country's exports of HMAP products ranged between 43 million and 95 million Canadian dollars over the same period [19]. The USA's import volume for selected herbs in 2005 was 179,380 metric tons. Its export of herbs and spices was valued at USD 2.2 billion for the same year. Also, USA's exports value for essential oil was almost USD1billion in 2004.

Eight European Union countries of Belgium, Luxembourg, Germany, Spain, France, Great Britain, Italy and Netherlands have significant trade in medicinal and aromatic plant products. Imports of medicinal and aromatic plant products into these countries from other countries outside the Union was estimated at 1.05 million metric tonnes for 2005 while exports to other countries outside the Union was put at 148,879 metric tonnes for the same year [35]. According to Customs Statistics for China for 2005, exports of traditional Chinese medicine (TCM) products increased by about 10.3% in 2005 compared to 2004 at a trade value of USD153 million. If the total exports of TCM products, traditional Chinese botanical raw materials and extracts and prepared Chinese medicines are included, the trade value reached USD 830 million [35].

The global market has witnessed significant increases in the trade in products of HMAPs in the last two decades. According to Sher [27], large quantities of about 74 species of MPs were being commercialized in the global market. Apart from these 74 major species, hundreds of others are traded in lesser quantities across national boundaries, sometimes illegally. Available data indicate that in various regions, the HMAP market is at present growing at an average of 3-4 times the growth rates of the national economies in the same regions. The increases in the trade, which reached 20% in some cases, imply that the market size is doubled every 4-5 years. The annual growth rate in the demand for HMAP products is put at 15-20%. According to the estimate of World Health Organization, the demand for MPs is likely to increase from the current USD14 billion a year to USD 5 trillion in 2050 [36]. The global trade in HMAP is however higher at USD 60 billion a year. When the volumes of traded materials with those of the previous decade are compared, there is necessary and sufficient evidence of growth in the market for HMAP products. The afore-mentioned points lead to the need for an in-depth examination of demand and supply issues in the marketing of HMAP products in the section below.

Application of Demand and Supply Theories in Marketing Hmap Products

Two of the most fundamental concepts in economics, supply and demand, make up the backbone of market economics. Demand refers to how much of a product or service is desired and can be paid for by buyers. The quantity demanded is the amount of a certain product that people are willing to buy at a certain price and at specified time period. The relationship between price and quantity demanded is known as the demand relationship. Supply, on the other hand, represents the volume of a commodity that can be offered to the market. The quantity supplied refers to the amount of a certain good producers/sellers are willing to supply at a particular time and at a specified price. The correlation between price and how much of a good or service is supplied to the market is known as the supply relationship. Price therefore, is a reflection of supply and demand. The relationship between demand and supply underlies the forces behind the allocation of resources. According to market economy theories, interaction of the impersonal forces of demand and supply will allocate resources in the most efficient way possible. This is the well known theory of "invisible hands" by Adam Smith.

The Law of Demand

The law of demand states that, if all other factors remain equal, the higher the price, the lower will be the demand for a good or service. In other words, the higher the price, the lower the quantity demanded. The amount that buyers purchase at a higher price is less because, as





the price of a good goes up, so does the opportunity cost of buying that good. People will naturally avoid buying a product that will force them to forgo the consumption of something else that they value more. Figure 1 shows that demand curve slopes downward meaning that it has a negative slope. A, B and C are points on the demand curve. Each point on the curve reflects a direct correlation between quantity demanded (Q) and price (P). For instance, at point A, the quantity demanded will be Q1 and the price will be P1. Thus, the traditional or normal demand curve illustrates the fact that price and quantity demanded move in opposite directions (negative relationship). This simply connotes that the higher the price, the lower the quantity demanded and the lower the price, the higher the quantity demanded.

The Law of Supply

The law of supply captures what happens to quantity offered for sale at a certain price. Contrary to the demand-price relationship, the supply-price relationship shows an upward (positive) slope. This means that the higher the price, the higher the quantity supplied. Producers/ sellers supply more at a higher price because selling a higher quantity at a higher price leads to greater revenue and subsequently, profit. A, B and C are points on the supply curve. Each point on the curve reflects a direct correlation between quantity supplied (Q) and price (P). At point B, for instance, the quantity supplied will be Q2 and the price will be P2.

Unlike the demand-price relationship, however, the supply-price relationship is a function of time. The time dimension is important to supply because suppliers must, but cannot always, react quickly to a change in demand or price. It is important, then, to try and determine whether a price change caused by a change in quantity demanded will be temporary or will last for a longer period Figure 2.

Supply and Demand Interactions

Demand and supply work in collaboration to determine the ruling market price. When demand exceeds supply, the price will rise because, according to the demand-price relationship, as demand increases, so does the price. Consequently, the rise in price should prompt more supply, given that the traditional supply curve holds. When supply and demand are equal (i.e. when the supply function and demand function intersect), the demand for that commodity is said to be in equilibrium. At this point, the allocation of resources is most efficient because the amount of goods being supplied is exactly the same as the amount of goods being demanded. Thus, all stakeholders (individuals, households, firms, or countries) are satisfied with that economic condition. At the equilibrium price, suppliers/sellers are selling off all the goods offered while consumers can get the exact quantities of goods that they are demanding.

As shown in Figure 3, equilibrium occurs at the intersection of the demand and supply curve, which indicates that there is no allocative inefficiency. At this point, the price of the commodity /service will be P* and the quantity will be Q.* P* and Q* are referred to as equilibrium price and equilibrium quantity, respectively. In the real market situation, equilibrium can only ever be reached in theory, so the prices of goods and services are constantly changing in relation to fluctuations in demand and supply. Disequilibrium occurs whenever the price or quantity is not equal to P* or Q*. If price is set too high, excess supply will be created within the economy, and there will be allocative inefficiency.

At price P1, the quantity of goods that the producers/sellers wish to supply is indicted by Q2. At P1, however, the quantity that the consumers want to consume is at Q1, a quantity much less than Q2. Because Q2 is greater than Q1, too much is being offered and too little is being bought. The suppliers/sellers are trying to offer more goods, which they hope to sell in a bid to increase their profit, but consumers



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The concepts of demand and supply and demand and supply interactions briefly examined above are applicable in the market for HMAP products. The proportion of people using herbal medicines in the United States increased from 2.5% in 1990 to 37.0% in 2000 [**37**]. A national survey also showed that the proportion of US residents aged 18 years and over that use complementary and alternative medicine (CAM) was 36.0% in 2003 Figure 4. CAM is group of diverse medical and health care systems, practices and products that are considered to be outside the purview of conventional medicine. When the various kinds of prayers said specifically for health reasons is included in the definition of CAM, the proportion of U.S. adults who used CAM in 2003 was 62.0% [**37**].

Herbal medicine is a major component in all indigenous peoples' traditional medicine. An important livelihood source for the poor in rural communities in Nigeria and the entire world is collection and sale of medicinal herbs [10]. However, today, the demand for HMAP products is far in excess of the supply in many cases with the result being a rise in price. This rise in price has the tendency to trigger reckless and unregulated collection of HMAPs for processing. This has the potential to result in increased number of endangered HMAP species which are growing in the wild in most parts of the developing world [13].

Supply and Demand Strategies: The Critical Linkage for Marketing of HMAP Products

The economic problem arises because consumers face unlimited wants that they have to satisfy with limited available resources. Three economic questions need to be asked when making a decision to solve the economic problem. These questions are "What to produce?" "How to produce?" and "Who will receive the goods and services produced?" The market price paid by consumers for goods and services reflect opportunity costs. Markets for productive resources (natural, human and capital) known as factor markets, determine the opportunity cost of productive resources. Market price can also be used to determine the best way to allocate scarce resources. Marketing is about understanding the demand of the consumer and meeting it. It entails creating demand for a product [38]. This necessitates the producer to devote time to understanding consumers' needs. The producer/seller is compelled to study consumer's thinking and motivation to make the purchase decision. The overriding question in marketing is: how does one's product or service fulfill a need? If there is no demand, can one be created through advertising and marketing? For most products, availability alone is insufficient to motivate people to buy. This underscores the need for a paradigm shift in marketing from product-orientation to consumer-orientation [39].

Countries' Participation in the Global Trade for Hmap Products

The South East Asian countries are the countries mostly involved in the trade in HMAP products, though the market is global. China and India, two countries well known for their large populations and ancient heritage of traditional medicines based on HMAPs, are also two of the world's largest markets for HMAP products. About 30 million ginseng plants sold annually to other countries from the United States have their destination as East Asian countries. The United States is also a major buyer of HMAP products from other countries to support its market estimated at USD 43 billion. Other major consumers include Germany, France, Italy, Spain and the United Kingdom. Europe as a whole is the destination for 25.0% of the world's merchandize of HMAP products. Major producers of HMAP products include the United States, Germany, Bulgaria, Poland, Japan, Madagascar and Sudan. A detailed review of selected major countries involved in production of HMAP products is discussed as follows.

Pakistan

Pakistan has a rich floral diversity containing 600 taxa of which about 700 species are being used as HMAPs. In Pakistan, 60.0% of the population is using HMAP products. In addition, an estimated 25,000 plant species are found in the Hindi Kush, Himalayas and Karakorum areas. Of this number, roughly 10,000 are useful. About 350 are growing in the wild while around 100 of these are collected and sold by local hakims (healers), plant collectors and dealers. To improve the marketing of locally available HMAPs on a sustainable basis, WWF-Pakistan, under the Northern Areas Conservation Project, regularly organizes and sponsors workshops on market linkage of HMAPs [27]. This is to find out new market segments and improve market potential of HMAPs. The wholesalers/local marketers are normally consulted and requested to help the communities in the identification HMAPs of economic values while the participants and local dealers and community people discuss the issues regarding marketing, threats posed by middlemen and commercially important plants.

South Africa

In South Africa, the demand for indigenous medicines and services is considerable compared with the demand for chemical medicines and orthodox health care services. The demand for HMAPs is growing due to a number of factors which include population increase, poverty and beliefs. As a result, the demand for HMAPs for use in producing indigenous medicines outstrips supply. The HMAP product market is based on indigenous plants which are generally harvested from the wild. The available stock of HMAPs is declining owing to lack of management and the fact that HMAPs are rarely cultivated. There are different possible scenarios presently under consideration for the development of HMAP product market in South Africa, which depend on the actions of key players in the markets.

The most likely scenario is the commercialization of production of HMAP products, which will lead to a rise in prices and consequently exclude less sophisticated players from the market. The cost of this

scenario will be borne largely by the consumers, who will expectedly lose access to basic medicines because of scarcity and price increases.

Recent findings show the HMAP product industry in South Africa is being thwarted by a decline in growth of HMAPs. It is also shown that increase in unemployment, increasing urbanization and prevalence of HIV and AIDS have led to a jacking up of the demand for HMAP products. Many households choose to consult traditional healers as they feel the treatment is more all-embracing compared with treatment offered by western medicine. Many people generally prefer the dual effect of "spiritual and physiological treatment" offered by TM compared with that from conventional medicines [20]. This corroborates findings by WHO [14], Mafimisebi and Oguntade [13], Mafimisebi and Oguntade [28] and Mafimisebi et al. [18] for Nigeria It is estimated that the conventional medicines industry of South Africa is worth about USD 415 million. It also constitutes around 5.6% of the nation's total health budget. Reports show that some 133,000 households in the country depend on earnings from HMAPs and HMAP product businesses as their source of livelihood. Majority of the people involved in the livelihoods of harvesting and sales of HMAPs are rural women, who nourish their households with the money made from selling HMAPs or their products.

India

The Indian systems of Medicine have identified 1500 HMAPs, of which 500 species are mostly used in the preparation of drugs. HMAPs contribute a considerable proportion (80%) of the raw materials used to manufacture drugs. The effectiveness of drugs produced from HMAPs mainly depends on the mode of harvest and processing. The Agricultural Technology Management Agency (ATMA) in India has been helpful to very poor farmers in linking them with reliable markets for high-value HMAPs. The ATMA is instrumental in helping to organize farmers and facilitating their learning how to profitably market HMAPs or make HMAP products that meet the specifications of buyers. ATMA also take up the role of coordination and mobilization of the experts from other organizations such as universities, research institutes, private firms, banks and nongovernmental organizations (NGOs) to develop and test the production technologies, to train the farmers and farm leaders and to arrange for the needed inputs.

The traditional system of medicine in India, known as "Ayurveda" or the science-of-life" dates back to 1000 B.C. Generally, the knowledge and practice of Ayurveda circulates within India while other countries are oblivious of these medical practices which boast of over 8000 types of Ayurvedic products. India is at present developing strategies to capture the global market for HMAP products. Largely organic HMAP products are part of the USD 36.9 billion global market for organic food. India has about 315 of the 400 families of flowering medicinal plants in the world. However, the expected spectacular growth in India's exports of medicinal plants is yet to be realized. A major fraction of the domestic market is still unorganized and consequently, unreported in most of the published data.

Standards and Regulations in Hmap Product Trade

For about 20 plant species that are traded on the international scene, trade regulation is in force owing to the pressure on their demand. Arising from a combination of factors, prominent among which is pressure from the herbal medicine market, trade in another group of 200 HMAPs are also being regulated. A larger proportion of European countries regulate or ban trade in plant species with declining populations in recent years especially those that are nearing the status of being endangered. Joint legislations in some European countries have served to fully or partially protect over 340 HMAPs. However, in many countries in Africa and Latin America where endangered HMAPs are found, legislations for protecting these species are one of non-existent, deficient or inadequately enforced. Given that there is so little regulation or monitoring of legal trade in a large number of HMAPs, cross border trade does not constitute a significant problem in the global market. In the cases where trade in some HMAPs is prohibited, smuggling can be the last resort only if the proceeds from sales are high enough to offset the fines imposed on defaulters when they are caught.

Sustainable and ethical harvest of wild growing HMAPs will prevent reckless exploitation. One way of meeting up with increasing demand for HMAP products while protecting wild populations of HMAP is to increase the area cultivated to HMAPs. HMAP cultivation is already taking place in Europe while it is just at the demonstration stage in the United States. Cultivation of HMAPs has barely been attempted in Africa and Latin America.

Standards and regulations are still not fully developed and operational for the Nigerian HMAP market. In Nigeria, the HMAP market is subject to standards and regulations set by the National Agency for Food and Drugs Administration and Control (NAFDAC) [40]. In Canada, the Natural Health Product Regulations to which the market for HMAPs is subjected went into force on January 1, 2004. The Directorate specially created to administer the regulations is tagged the Natural Health Products Directorate. Prior the creation of this directorate, natural health products were classified as either foods or drugs and were placed under the control of the Food and Drugs Act and Regulations. The regulations include provisions for definitions, product licensing, site licensing, good manufacturing practices, clinical trials and labelling and packaging requirements [19].

In the U.S., the market for HMAP products to be consumed by humans is governed by the standards and regulations set by the Food and Drug Administration. Specifically, the US Dietary Supplement Health and Education Act, 1999, regulate dietary supplements and phytopharmaceuticals. Dietary supplements are defined as "preparations that contain vitamins, minerals, and herbs etc, which are used in addition to a normal diet". While the Food and Drug Administration is responsible for regulations, the monitoring of advertising is overseen by the Food Trade Commission. The European Union has been making frantic efforts to come up with common standards and regulations to govern the market for HMAP. The common standards and regulations were contained in the document titled "Guideline on Good Agricultural and Collection Practice (GACP) for Starting Materials of Herbal Origin" which was published in 2006. The guideline is to ensure consistent quality of the plant materials used in the manufacture of HMAP products. The latest set of standards and regulations for the HMAP products market were published on 1st September, 2008. These relate to good manufacturing practice in respect of HMAP products which are meant for human and veterinary use.

One of the major players in the HMAP products market in Asia is the People's Republic of China (PRC). The regulatory agency in the PRC is the State Food and Drug Administration. The Agency is reported to have started implementing measures directed at ensuring quality control of imported HMAP products. The measures set out detailed provisions relating to a number of issues affecting imported HMAPs or HMAP products [35].

Widening the Market for Hmap Products

- 1. A number of steps need to be taken to raise supply and widen the market for HMAP products. These steps are as follows.
- **1.** Good knowledge of demographic characteristics of consumers and global distribution of consumers.
- 2. There is need to develop different marketing campaigns which will be based on whether demand for HMAP products is weak or strong.
- **3.** It is important to streamline product websites to include interactive elements that make it possible to easily understand customers' desire.
- **4.** Demand can be created via a long term process in which education, awareness and branding are important components. This will create interest which can then be followed by trial. Interest and trial will subsequently lead to demand.
- 5. In a demand mindset, there is need to be more strategic, combining a campaign of both rational information with desire oriented emotion. It is important to take the time to study idealized market and idealized customer profile and analyze them to ascertain what demand level is for HMAP products.
- **6.** Conducting a participatory rural appraisal (PRA) to access local conditions and potential markets is vitally important in order to identify HMAPs in high demand.
- 7. Creating bio-partnerships that link rural communities with industry. The vast potential of harnessing traditional knowledge and associated plant resources can be mobilized through improved coordination of activities among the major stakeholders. Multiple links need to be established between stakeholders at various nodes within a value-chain or a production-to-consumption system framework.
- 8. Organizing collectors of HMAP and producers of HMAP products into Farmer/ Producer Interest Groups and Farmer/ Producer Associations is important to increase the production of different high-value crops or products. This is however challenging, given the different social, religious and economic issues.
- **9.** Accessing the market demand for specific HMAP is also necessary to increase the production. This will reveal those HMAPs for which there is stable and growing market.

Conclusion

The market for HMAP products is relatively young and small in Nigeria. However, globally, there is a small but growing niche market for these products. There are problems in the classification of some HMAP products but when the export of these products is considered, the Harmonized Commodity Description and Coding (HCDC) system of tariff nomenclature provides a standardized classification system that is applicable across international borders. Standards and regulations for the HMAP market are still not fully developed. However, many countries across the developed and developing worlds are just coming up with standards and regulations that can promote acceptable benchmarks for the collection of HMAP, their processing and marketing. The increasing interest in natural and plant-based medicines will continue to be a powerful force behind the rising demand for HMAP products has seen

the trade in HMAP take a quantum leap in recent years. Serious steps have to be taken, therefore, so as to meet up with the rising demand for products derived from HMAPs.

References

- 1. King SR (1992) Conservation and Tropical Medicinal Research. Shaman Pharmaceutical Incorporated p. 650.
- Izuakor TM (2005) Bio-resources Conservation: The Role of Agro-forestry. Heritage Printers, Nigeria 1-10.
- World Health Organization (1998a) Quality Control Methods for Medicinal Plant Materials. WHO, Geneva.
- World Health Organization (1991) Guidelines for the Assessment of Herbal Medicines. Programme on Traditional Medicines, WHO, Geneva 4.
- Karan V, Kumar V (2002) Trade and Production of Herbal Medicines and Natural Health Products, sponsored by ICN-UNIDO, AREA Sciences Park, Trieste, Italy, 91.
- Bannerman RH (1982) Traditional Medicine in Modern Health-care, World Health Forum 38-13.
- 7. World Health Organization (1980) Global Demand for Medicinal and Romantic Plants.
- Sofowora A (1993) Medicinal Plants and Traditional Medicine in Africa. Spectrum Books Limited Ibadan, Nigeria, 289.
- Ogunlela VB (2007) Husbandry and Cultivation of Medicinal Plants In: Onibi GE, Agele SO, Adekunle VAJ, Olufayo MO (Eds.), Medicinal Plants in Agriculture: The Nigerian Experience, Nigerian.
- Mafimisebi TE, Mafimisebi OE, Ikuemonisan ES (2013). The Informal Trade in Medicinal Herbs and Herbal Medicines as Supplementary Income Source for Women in Ondo State, Nigeria In: The Miracles and Socio-economic Aspects of Ethno-Botany and Ethno-Medicine, (in press).
- 11. Hoareau L, DaSilva EJ (1999) Medicinal Plants: A Re-emerging Health Aid. Elec J Biotech 2.
- 12. Technical Centre for Agricultural and Rural Co-operation (CTA) (2007) Medicinal Plants: Rural Radio Resource Pack 07/3, Wageningen, The Netherlands.
- Mafimisebi TE, Oguntade AE (2010) Preparation and Use of Plant Medicines for Farmers' Health in Southwest Nigeria: Socio-cultural, Magico-religious and Economic Aspects. J Ethnobiol Ethnomed 6: 1.
- World Health Organization (2001) WHO Country Cooperation Strategy: Nigeria, World Health Organization Regional Office for Africa, Brazzaville.
- Karki M, Tiwari B, Badoni A, Bhattarai N (2003) Creating Livelihoods Enhancing Medicinal and Aromatic Plants based Biodiversity – Rich Production Systems: Preliminary Lessons from South Asia.
- Temptesa MS, King S (1994) Tropical Plants as a Source of New Pharmaceuticals In: Barnacal PS (ed.) Pharmaceutical Manufacturing International: The International Review of Pharmaceutical Technology Research and Development. Sterling Publications Ltd., London, UK.
- Bordeker G (2002) Medicinal Plants: Towards Sustainability and Security; IDRC Medicinal Plants Global Network Sponsored Discussion Paper for WOCMAP II, Chiang Mai, Thailand.
- Mafimisebi TE, Oguntade AE, Fajemisin AN, Aiyelari OP (2012). Local Knowledge and Socio-economic Determinants of Traditional Medicines Utilization in Livestock Health Management in Southwest, Nigeria. J Ethnobiol Ethnomed 8: 1.
- 19. Agriculture and Agri-Foods Canada (2009) Canada's Medicinal Plant Industry 11: 12:59
- 20. World Health Organization (1998b) Health Promotion Glossary. WHO/HPR/ HEP/98.1.
- 21. Tiwari S (2008) Plants: A Rich Source of Herbal Medicine. Journal of Natural Products, 1.
- 22. Anton R (2002) Aspects of Herbal Medicines Regulation in Europe and the United States. Pharma J 269: 4032.
- Dipankar CR., Shital KB, Md MS (2013) Current Updates on Centella Asiatica: Pyhtochemistry, Pharmacology and Traditional Uses. Medicinal Plant Research 3: 20-36.

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- 24. Joy PP, Thomas J, Varghese CS, Indumon S S, George D (1998) Medicinal Plants. Kerala Agricultural University, Kerala, India.
- 25. World Health Organization (2011) Health Systems Policies and Service Delivery, WHO African Region: Nigeria.
- Macia J M, Garcia E, Vidaurre PJ (2005) An Ethno-botanical Survey of Medicinal Plants Commercialized in the Markets of La Paz and El Alto, Bolivia. J Ethnopharmacol 97: 337-350.
- 27. Sher H (2002) Feasibility Study on the Medicinal Plants of Ghulkin Valley, Gilgit, Pakistan: Sustainable Resource Use and Bio-diversity Conservation at Key Sites in the Northern Areas of Pakistan. Report. WWF-Pakistan, Northern Areas, Gilgit.
- Mafimisebi TE, Oguntade AE (2011) Health Infrastructure Inequality and Rural-Urban Utilization of Traditional and Orthodox Medicines in Farming Households: A Case Study of Ekiti State, Nigeria. 197-214.
- 29. Parke A, Tikasingh T (2004) The Global Market for Herbal Products and Pertinent Trade Issues.
- Govindasamy R, Onyango B, Puduri V, Simon J, Asante-Dartey I, et al. (2006) Impediments to Marketing African Natural Products from Ghana: Preliminary Results.
- 31. Gruenwald J (1998) Personal Communication.

- 32. Sauer P (1999) Finding the Green in OTC, Chemical Market Reporter 256: 14
- Wilhelm DB (2000) Levelling Demand for Dietary Supplements, Chemical Market Reporter 257: 8.
- 34. Mertens G (2000) From Quackery to Credibility: Unconventional Health-Care in the Era of High-tech Medicine, Fina.
- International Trade Centre UNCT AD/WTO (2006) Market News Service, Medicinal Plants and Extracts, No. 18.
- 36. Government of India (2000) Medicinal Plants Introduction, Indian System of Medicine and Homeopathy (ISMH), Department of ISMH, Ministry of Health and Family Welfare, Government of India.
- 37. Wong C (2013) Alternative Medicine Usage in the United States
- Seperich GJ, Woolverton MW, Beierlein JG (2002) Introduction to Agribusiness Marketing. New Jersey: Prentice-Hall Inc.
- 39. Downey D, Erickson S, Akridge J, Barnard F (2001) Agribusiness Management - (3rd edn) Published McGraw-Hill Publishing Company, USA.
- National Agency for Food and Drug Administration and Control (NAFDAC) Decrees and Regulations, 1993 - 1999, Government Press various issues.