Filipino use of Medicinal Plants in Selected Literary Genres: A Reflection of Tradition

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Abstract — Literature in its various narrative forms (e.g. novel, legend etc.) reflects human society and culture, of which the latter comprising a whole complex of human behavior learned by people, can and is inherited across generations. One of these cultural traditions is the use of medicinal plants as cure for sicknesses which finds documentation in literary works among early Filipinos and carry the belief up to the present time. Using the four narratives consisting of three full-length novels and a legend as literary sources, the study determined the types of plants traditionally used to cure various sicknesses among Filipino communities, identified the kind of sickness cured by the plants, and presented insights gleaned from such exposition. The different medicinal plants mentioned in the narratives include the alugbati or Malalag nightshade or spinach (Basella alba/Basella rubra), Atis or Custard apple (Annona squamosa), Dampimbanal or holytouch (Hierochloe borealis/Hierochloe odorata), Banaba (Lagerstroemia speciosa) and tamarind fruit (Tamarindus indica). In the novels, Alugbati leaves together with tamarind juice was mentioned as remedy for psychosomatic symptoms associated with adolescent’s stress from the onset of manhood. Custard apple leaves was mentioned as cure for body aches and pains, while Dampimbanal or holytouch was used as a relief for fractured bones. The plant parts of Banaba were mentioned to help address different internal disorders, like an ailing kidney, and problems related to the urinary tract and the stomach. In the legend, tamarind was mentioned to be a cure for colds. Some of the insights gleaned from this study are the renewed appreciation and valuation of the knowledge gained in the use of medicinal plants as cure for various illnesses among Filipinos in the context of conservation of cultural tradition, biodiversity and community health care and drug development, the awakening of the awareness and interest of the younger generation on the usefulness of medicinal plants as cure of sickness and their subsequent motivation, and the appreciation of respect for other peoples’ traditions, knowledge gained on various medicinal plants and their uses which could have direct value in addressing ailments in their own homes.

Keywords — Filipino literary genres, medicinal plants, cultural tradition.

I. INTRODUCTION

Literature is a social product that reflects human society and culture. It represents the consciousness of the society and the spirit of age. Voices from the past as well as those of the present time are heard through literature. History, people’s customs and traditions, beliefs and practices are learned through reading literature. It allows one to see varied experiences of people that give wisdom about life and relate those experiences to one’s own life and emotions and find meaning in it through one’s reflections. As literature portrays real events in life, the readers experience life as they get involved in reading literatures created and produced by people based on the actual accounts of their daily lives. Taine (1886) emphasized that literature is a collective expression of society embodying the spirit of the age; and race, milieu and moment are the formative factors behind the emergence of this expression [1]. The interaction of this triad produces a speculative mental structure which leads to the development of general ideas that find expression in great art and literature.

Literature is sometimes interpreted as a medium for reflecting norms and values, as revealing the ethos of culture, the processes of class struggle and certain types of social facts [2]. Society’s existence is contingent with the presence of culture as it is the center of a society. People’s ways and methods including behavior which comprise their social life are all part of culture which in turn can be inherited from generation to generation. These behaviors and actions of people in the society are inherent in the environment of culture. The British Anthropologist and founder of cultural anthropology, Edward Tylor stated that culture is “that complex whole including beliefs, art, religion, values, norms, ideas, laws, thoughts, knowledge, customs and other capabilities acquired by man as a member of a society” [3]. It is the totality of human experience acquired during transmission of heritage from one generation to another and to learn the ways of learning, eating, drinking, behaving, walking,
dressing, and working, all these constituting the “culture of man”.

In a social situation, culture is shared and transmitted. It is not confined to an individual but instead passed on to all members of the community. Customs, beliefs, traditions, values, practices, and traits are equally shared by members of the community. More so, these aspects of culture are conveyed from one individual to another in varying times. It is transmitted through language as a means for communication which passes cultural traits from one generation to the next [4]. Through culture, people and groups define themselves, conform to society's shared values, and contribute to society. Thus, culture includes many societal aspects: language, customs, values, norms, mores, rules, tools, technologies, products, organizations, and institutions which refer to clusters of rules and cultural meanings associated with specific social activities. Common institutions are the family, education, religion, work, and health care [5].

Culture as a whole complex of human behavior is learned by people in each generation. This means that the traditional forms of human behaviors are features of culture in a society. Kroeber (1987) pointed out that culture consists of patterns, explicit and implicit, of and for behavior acquired and transmitted by symbols, constituting the distinctive achievement of human groups, including their embodiment in artifacts; and the essential core of culture consisting of traditional ideas and their attached values [6]. Culture systems may, on one hand, be considered as products of action, and on the other as conditioning elements of further action.

Regarding respect for cultural boundaries, literature plays a very powerful force to people as it made use of language to reflect social life and express thoughts and feelings of authors [7]. Through language, relationship between culture and societal phenomena is clearly determined which in turn facilitates the understanding of literature. Swadesh (1964) stated that language is a “cultural complex with a body of customary forms transmitted from generation to generation and from society to society in no different way from other cultural forms” [8]. Likewise, language and literature display certain salient features of communication that distinguish one culture from another.

Among the literary genres that best showcase cultural traditions and practices is no other than a novel because it shows connections of people in terms of time and place, manifesting feelings, dreams, fears, happiness and other human emotions from the past to the present. Novel as a genre of literature represents life. This holds true based on Boland’s maxim that literature is “an expression of society” where the modern social critics and novelists considered the novel as the realistic picture of the society [9]. In the interaction of characters to one another in the novel there is that defining attribute of realism which serves as reflections of the different faces of man cloak in different coatings such as culture, religion, history, and politics.

A novel is considered great if it is built on human experience where characters become real, convincing and timeless. The length of the novel allows greater number and variety of characters, a more complicated plot and elaborative use of setting as well as complexity of theme. It has opportunity for character development and deeper view of human nature and experience. Taine (1886), the father of the sociology of literature pointed out that a novel is a portable mirror reflecting all aspects of life and nature and it served as a dominant genre of industrial society.

Another type of literary genre that focuses on cultural tradition aside from novels is a legend. According to Tangherlini (1990) legend is a short mono- episodic, traditional, highly ecotyped historicized narrative performed in a conversational mode, reflecting on a psychological level a symbolic representation of folk belief and collective experiences and serving as a reaffirmation of commonly held values of the group to whose tradition it belongs [10]. Human values are demonstrated in legend as it possesses certain qualities that give the tale verisimilitude. De Caro (2015) stated that legends are true narratives regarded by their story tellers and listeners as recounting events that actually take place [11]. They are also considered historical accounts as they discuss human interactions with other worlds.

Part of cultural tradition and practice of early Filipinos up to the present is the transmission of customs or beliefs from generation to generation. Cultural tradition refers to a belief or behavior passed down within a group or society with symbolic meaning or special significance and origins in the past. One of these cultural traditions is the use of medicinal plants as cure of sickness. Early Filipinos believed that there are plants that can help cure sickness and this belief is even carried to the present time. Hence, it is in the novels “Salamatun” by Dean Francis Alfir, “Eight Muses of the fall” by Edgar Calabia Samar, “Viajero” by F. Sionil Jose, and “The Legend of Sampaloc Lake” by Arias Querubin that the study aimed to determine the types of plants used to cure sickness, to identify the kind of sickness cured by these traditional plants, and present insights that can be gleaned from this study.

II. METHODOLOGY

2.1 Materials for Criticism
This study made use of four Filipino narratives consisting of three full-length novels “Salamanc” by Dean Francis Alfaro, “Eight Muses of the Fall” by Edgar Calabia Samar, “Viajero” by F. Sionil Jose, and a legend, “The Legend of Sampaloc Lake” by Arias Quezario as its primary sources.

2.2 Treatment of Materials

The narratives were analyzed using the sociological and cultural approaches to literary criticism, and textual analysis. Sociological criticism focuses on the relationship between literature and society [12] and starts with a conviction that art’s relation to society is vitally important and that the investigation of this relationship may organize and deepen one’s aesthetic response to a work of art [12]. Literature in the cultural, economic, and political context in which it is written or received is examined by a sociological critic as well as exploring the relationship between the artist and society. Included also in the works of the critic is to analyze the social content of literary works—what cultural, economic or political values a particular text implicitly or explicitly promotes and to examine the role the audience has in shaping literature [14]. The critic may likewise look into the culture of society such as beliefs, values, taboos, and religion. In this study, the literary genres are described based on the sociological and cultural elements present on the varied features and present them as excerpts supported with evidence and analyses.

Cultural approach involves textual analysis to gather information on how other human beings make sense of the world [15]. Textual analysis expresses how text ‘is unmade, how it explodes, disseminates – by what coded paths it goes off’ [16] under the control of the player. It is a means to gather information in making sense of the world by human beings. In relation to the study, the texts of the varied literary genres were read and assigned codes to indicate their relevance to the content of the study. Through content labeling of the texts, the content patterns were analyzed qualitatively to establish their meanings within the texts. Frey et al., (1999) stated that the purpose of textual analysis is to describe the content, structure, and functions of the messages contained in the texts [17].

III. RESULTS AND DISCUSSION

In the novel “Salamanc” by Dean Francis Alfaro first published in 2006 [18], it made mentioned of alugbati (Malabar nightshade or spinach, Basella alba/Basella rubra) and tamarind juice as cure for psychosomatic symptoms. Part of the household remedies as cure for certain illnesses is the use of this traditional plant. The Rodriguez family who owned a butterfly farm had a son named Rommel. He was on his transitional stage from childhood to adulthood. As he experienced physical and psychological changes in his adolescence, he became seriously ill.

“He had been at the cusp between childhood and manhood, the time when his body began its transformation into a man. Rommel did not have the luxury of a chrysalis that hid his ungainly changes. It was on the day that he noticed the sudden arrival of soft fuzz like kitten’s fur between his belly button and penis that Rommel began to get violently ill.” (p105)

Rommel’s family and relatives were so worried about him without knowing his real health condition.

“His parents and uncles, unaware that Rommel’s psychosomatic symptoms were brought about by the adolescent’s disgust towards the onset of manhood, immediately prescribed bed rest and a diet of alugbati steeped in the juice of tamarinds.” (105)

In the Philippines, alugbati or Malabar spinach is a common backyard plant used as vegetable and source of herbal medicine. Local folks used this plant as source for alternative medicines aside from being a good substitute for spinach in steam or preparation of broth. According to Affleap (2011) local folks used the alugbati leaves to reduce local swelling of wounds, applied to boils and ulcers to hasten suppuration, helps soothe relief of pain when applied to burns and scalds and as mild laxative by decocting the leaves [19]. It is also an excellent source of calcium, iron and also a good source of vitamins A, B and C, with a high fiber value that improves bowel movement when used as food. Based on folklore, Stuart (2017) explained that the roots of alugbati are employed as rubefacient while poultice of leaves are used to reduce local swelling [20]. Alugbati sap on the other hand, is applied to acne eruptions to reduce inflammation and its pulp leaves applied to boils and ulcers to hasten suppuration. Sugared juice of alugbati leaves is also used for catarrhal afflictions in children while leaf-juice mixed with butter is used as a soothing and cooling agent when applied to burns and scald. Alugbati is gaining popularity worldwide with health benefits such as fighting oxidative stress, supporting eye health, improving digestion, and keeping the brain sharp [21].

For the novel “Eight Muses of the Fall” by Edgar Calabia Samar published in 2013 [22], the use of medicinal plants as cure for certain ailments as part of tradition of Filipinos is also evident. Daniel, the main character of the novel who wanted to be a writer created a character in his story.

He made Arcangel, the son of a medicine man, a native herbalist. And so, he was familiar with the many
shrub and roots used for healing including those many shrubs and roots that the body cannot take (p89).

Daniel as a writer did research work as inputs for his story. He wanted to know what other plants can be used to cure ailments.

The custard apple, he found out, could cure many of the body aches and pains. He discovered the dampimbanal, the holytouch, a blade of grass that was placed over fractured bones... From there he learned many other herbs, even those that had no medicinal value-malit, carabao grass, lizardtongue, talahib (p89).

Custard apple or Annona squamosa is an edible tropical fruit and is also called sugar apple or sweetsop. Its local name in the Philippines is Atis. Its seeds have many beneficial effects and used as folk medicines like stomach pain. Yong et al., (2011) explained that custard apple seeds in traditional medicine were mainly used to treat various digestive disorders and showed some postcoital anti-fertility activity [23]. It is also an insecticidal agent. It has also been reported that apart from the root and the stem, custard apple leaves exhibit the following pharmacological activities such as antibacterial, antihyperlipidemic, analgesic, anti-inflammatory, antidiabetic, hepatoprotective, and antilucre [24]. Custard apple is also used as a vermicide, for treating cancerous tumors, applied to abscesses, insect bites and other skin complaints while crushed leaves are sniffed to overcome hysteria and fainting spells [25]. Other uses of custard apples mentioned include: scrape root-bark are used for toothache; powdered seeds are used to kill head-lice and fleas while crude extracts of different parts and pure isolated phytoconstituents of its fruits were reported to acquire anti-diabetic, antiviral, antioxidant activity, respiratory stimulant, and diuretic properties. It was also reported that custard apple was very useful for the development of the brain of the fetus during pregnancy and improvement of the immune and nervous system.

For Dampimbanal or holytouch (Hierochloe borealis/Hierochloe odorata) on the other hand as a medicinal herb, its leaves are used as treatment for fevers, coughs, sore throats, chafing and venereal infections [26]. Its stems are also used to treat windburn and chapping once soaked in water. The smoke produced from steamed leaves is used as treatment for colds if inhaled.

In the novel Viajero by F. Sionil Jose published in 1993 [27], Buddy the main character of the story was reading the letters of Marcelo H. del Pilar, a Filipino hero, who was exiled in Spain. He recognized his anguish in relation to his experience of being sick abroad. On his fifth week in Spain he got feverish and his cough worsened. As he no longer received financial support, he cannot afford to buy medicines and food. It was that moment that thoughts of being home came to him so he could have some medicinal plants for cure.

...If I were at home, I would most probably be able to prescribe some medicinal plants for myself. There are so many of them which we have not been able to develop because we do not know these plants, and even if we did know, we are so used to Western medicines. ... Take the common Banaba for instance... it is abundant in every part of the country; its leaves, its flowers when they are boiled, drinking the stock is a good cure for many internal disorders, for a bad kidney, for problems in the urinary tract, in the stomach. We tend to look down on our herbolarios-we even call them brazos-but there is a lot of experience in these people, experience with medicinal plants which they use in abundance (p111).

Banaba with the scientific name of Lagerstroemia speciosa is a flowering plant or a species of crepe myrtle that grows in the Philippines and Southeast Asia. It is widely used in the country as herbal medicine for diabetes and weight loss [28]. The folkloric use of Banaba include: decoction of the bark for the treatment of diarrhea; decoction of leaves for diabetes mellitus, as diuretic and purgative; the roots have been used for a variety of stomach ailments; bark, flowers and leaves are used to facilitate bowel movements, leaf decoction or infusion is used for bladder and kidney inflammation, dysuria, and other urinary dysfunctions [29]. Other folkloric uses involve decoction of fruits or roots as gargoyle for aphthous stomatitis, and decoction of leaves and flowers for fever and diuretics.

There are studies also indicating that corosolic acid in Banaba acts like insulin and lowers the blood sugar. Corosolic acid according to Murakami et al., (1993) is a triterpenoid glycoside that improves the cellular uptake of glucose [30]. Banaba as a popular medicinal plant, is also claimed to clear obstructions from the natural ducts of the body and induce urination if water from boiled leaves is taken. Moreso, extracts from boiled roots are used against small ulcers of the mouth and a leaf poultice is used to relieve malarial fever and applied on cracked feet [31].

In “The legend of Sampaloc (Tamarind) Lake” by Arias Querubin [32], a plant that can cure illness was mentioned. This plant is called Sampaloc or Tamarind (Tamarindus indica). As the legend goes, there lived a greedy couple who owned a large house with a big sampaloc or tamarind tree in their backyard in the latter part of the 18th century. An old woman who happened to pass by the couple’s house asked if she could have a fruit of the plant which she believed was a cure for colds. The couple asked her:

“What do you want? ” Don’t you know that you are disturbing us at the time of the day?”
The old woman replied: “I would like to ask for some Sampaloc fruit to cure my colds.” ...Something sour will cure me.
But instead of responding to the old woman’s request, the couple drove her away. The old woman begged the couple to give her a fruit.

“Please have pity. Please give me just one fruit”. (p62)
The old woman believed that if she could eat the tamarind fruit her sickness will be cured.

Tamarind (Tamarindus indica) according to Kuru (2015) belongs to the Fabaceae family of plants and used as traditional medicine [33]. It has a long history of medicinal use like other ancient foods. Traditionally, tamarind is used to help ease stomach discomfort, aid digestion and promote better bowel movement. It also helps relieve fever, sore throat, rheumatism, inflammation and heat stroke. Meanwhile, dried or boiled tamarind leaves and flowers are made into poultices for swollen joints, sprains, boils, hemorrhoids and conjunctivitis [34]. As a good source of thiamine, iron, magnesium, phosphorus and tartaric acid, tamarind also contains niacin, calcium, vitamin C, copper and pyridoxine [35]. People take tamarind for constipation, liver and gallbladder problems, stomach disorders as well as to treat colds and fever [36]. It is also used to treat pregnancy related nausea and children with intestinal worms. Tamarind is also used as flavoring in beverages and foods.

Man’s significant experiences are captured through literature. It can be of social, political, personal or cultural aspects. Culture focuses on many facets such as beliefs, practices, traditions and language. According to Bueno (2012) tradition refers to the customs, rituals, belief, folklore, habits in a given ethnic group [37]. Oral and written communications serve as the modes for the transmission of knowledge, skills, and attitudes of person to others as well as their actions based on their experiences, imaginations and exposures to other members in the society. People’s conformity to rules, ritual, custom, values, mores, folkways and other relevant prescription of culture is brought by their conversion of behavior out of varied interactions with others. They conform to the way of life of the community because of the social activities and experiences embedded in their respective individual practices. Their parents, families, and the society where they live- transmit the social model provided by the social beings. One of the tradition of Filipinos is their belief in using plants as cure for certain illnesses. Plants are very essential in man’s existence. According to Khan (2016) they are used for medicinal purposes long before pre-historic period aside from being used as food, flavoring, perfume, and for spiritual activities [38]. Healing with medicinal plants is an old practice as old as mankind itself and the connection between human and their search for drugs in nature dates from the far past [39]. Man’s awareness on the use of medicinal plants is the product of man’s struggle for many years. The knowledge of early Filipinos regarding use of medicinal plants is manifested in their traditional story regarded as unauthenticated historical facts. It shares the understanding of the past and explains man’s survival in their day to day life.

Truly varied literary genres showcase culture, beliefs and practices of early inhabitants. One can gleaned insights into specific practices like using medicinal plants in curing diseases or illnesses which are beneficial to people in the new generation. The study of Hong et al., (2015) stated that medicinal plants played a significant role in healing various human disorders and grinding for example, was a widely used method to prepare traditional herbal medicines [40]. This knowledge of early people in the use of medicinal plants captured in the pages of literature showed the value they put into their health. Mesfin et al., ([33]) explained that traditional knowledge of medicinal plants and their use by indigenous healers, and the drug development in the present are not only useful for the conservation of cultural tradition and biodiversity but also for community health care and drug development of the local people [41]. This is supported by Ermias et al.’s statement that the indigenous knowledge on medicinal plants appears when humans started and learned how to use the traditional knowledge on medicinal plants [42].

This leads to the thinking on the importance of knowledge on the use of medicinal plants and the way to process them for cure of some physical illness and pain. This knowledge has been transmitted orally for generations through word of mouth and found in the pages of literature which shows how to preserve such very rare knowledge. The need to continuously nurture and preserve this knowledge, which is also part of tradition, the use of medicinal plants in curing illness is significant in a sense that the younger generation of our modern society have begun to show a waning interest in carrying this traditional practice. Hence, the role of literature is to make readers aware that such tradition and practice exist, and such exposition is both relevant and important in the present time.

IV. CONCLUSION
As literature captures significant human experiences, it also imparts knowledge on traditions, customs and beliefs of people. It plays a very powerful force to people
through the language used as it speaks vividly of the kind of life they lived in society. The details of their day to day life is captured ranging from varied experiences in relation to their culture, beliefs, practices and traditions. Part of this tradition is the use of medicinal plants which people use to cure different kinds of illnesses. This is best described in the pages of novels and legend which show that in the earlier times knowledge in the use of traditional medicinal plants as cure is very important as this has been handed through generations.

Using the four narratives consisting of three full-length novels and a legend as literary sources, the study determined the types of plants traditionally used to cure various sicknesses among Filipino communities, identified the kind of sickness cured by the plants, and presented insights gleaned from such exposition.

The different medicinal plants mentioned in the narratives include the alugbati or Malabar nightshade or spinach (Basella alba/ Basella rubra), Atis or Custard apple (Annona squamosa), Dampimbanal or holytouch (Hierochloe borealis/Hierochloe odorata) and Banana (Lagerstremia speciosa) and tamarind fruit (Tamarindus indica). In the novels, Alugbati leaves together with tamarind juice was mentioned as a remedy for psychosomatic symptoms associated with adolescent’s stress from the onset of manhood. Custard apple leaves was also mentioned to cure body aches and pains, while Dampimbanal or holytouch was used as a relief for fractured bones. The plant parts of Banaba were mentioned to help address different internal disorders, like an ailing kidney, and problems related to the urinary tract and the stomach. In the legend, tamarind was mentioned to be a cure for colds.

The insights gleaned from this study include the renewed appreciation and valuation of the knowledge gained in the use of medicinal plants as cure for various illnesses among Filipinos in the context of conservation of cultural tradition, biodiversity and community health care and drug development. This exposition also helps awaken the awareness and interest of the younger generation on the usefulness of medicinal plants as cure of sickness and further motivate them to value this knowledge. Furthermore, literature helps all readers understand the significance of respecting other peoples’ traditions, the importance of knowledge gained on various medicinal plants and their uses which they could also make use as remedies for ailments in their own homes.

ACKNOWLEDGEMENTS

The author acknowledges the beneficial insights, editing works and critical advising provided by Dr. Francisco M. Heralde III.
[16] Barthes, R., 1977. Image Music Text. London: Fontana Press
[17] Frey, L., Botan, C., & Kreps, G. (1999). Investigating communication: An introduction to research methods. (2nd ed.) Boston: Allyn & Bacon.
[18] Alfar, Dean Francis. (2017). Salamanca. Anvil Publishing Inc.
[19] Affleap. (2011). The Health and Medicinal Benefits of Alugbati. Retrieved from: https://affleap.com/the-health-medicinal-benefits-of-alugbati
[20] Stuart, Godofredo. (2017). Philippine Medicinal Plants. Retrieved from: http://www.stuartxchange.com/Alugbati.html
[21] Picincu, Andra. (2018). What are the Benefits of Alugbati? Retrieved from: https://healthyeating.sfgate.com/benefits-alugbati-9863.html
[22] Samar, Edgar C. (2013). Eight Muses of the Fall. Anvil Publishing, Inc.
[23] Yong, Jianwei C. and Li, Chen Xiang. (2011). Beneficial Aspects of Custard Apple (Annona squamosa L.) Seeds. Nuts and Seeds in Health and Disease Prevention. Edited by: Preedy, V.R., Watson, Ronald Ross, and Pateel, V.B. Retrieved from: https://doi.org/10.1016/B978-0-12375688-6.10052-0, Elsevier Inc.
[24] Okoye, T. C., Uzor, P.F., Onyeto, C.A. and Okereke, E.K. (2014). Safe African Medicinal Plants for Clinical Studies. Toxicological Survey of African Medicinal Plants. Elsevier Inc. Retrieved from: https://doi.org/10.1016/B978-0-123800018-2.00018-2
[25] Zahid, M., Mujahid, M., Singh, P.K. Farooqui, S., Parveen S. and Arif, M. (2018). Annona squamosa Linn. (Custard apple): An Aromatic Medicinal Plant Fruit with Immense Nutraceutical and Therapeutic Potentials. International Journal of Pharmaceutical Sciences and Research.
[26] www.naturalmedicinalherbs.net Website. Medicinal Herbs. Holy Grass (Hierochloe Odorata). Retrieved from http://www.naturalmedicinalherbs.net/herbs/h/hierochloe-odorata-holy-grass.php.
[27] Jose, F. S. (1993). Viajero. Solidaridad Publishing House, Ermita Manila.
[28] www.webmd.com Website. Banaba. Retrieved from: https://www.webmd.com/vitamins/ai/ingredientmono-1089/banaba
[29] www.stuartxchange.org Website. Philippine Medicinal Plants. Retrieved from: http://www.stuartxchange.org/Banaba.html
[30] Murakami, C. et al. (1983). Chemical and Pharmaceutical Bulletin.
[31] www.philstar.com Website. (2011). Tree of the Month Part 1 Banaba (Lagerstroemia speciosae)