

*PROSEA: Plant Resources of South-East Asia No. Stimulants [H.A.M. And M. Wessel (editors) Van Der Vossen] on www.enganchecubano.com *FREE* shipping on qualifying offers.*

Salah satu tanaman obat yang digunakan sebagai obat herbal yaitu tanaman kola. Biji tanaman kola diketahui mengandung senyawa metabolit sekunder berupa kafein, katekin, dan tanin. Dalam pengobatan tradisional, biji tanaman kola digunakan sebagai stimulan, obat kuat, dan astrigen. Biji tanaman kola bisa dikonsumsi segar dengan cara dikunyah atau diolah terlebih dahulu menjadi bubuk sebelum diseduh menjadi teh. Metabolit sekunder merupakan senyawa yang dihasilkan atau disintesa pada sel dan grup taksonomi tertentu pada tingkat pertumbuhan atau stress tertentu. Senyawa ini diproduksi hanya dalam jumlah sedikit, tidak terus-menerus, yang berfungsi untuk mempertahankan diri dari habitatnya dan tidak berperan penting dalam proses metabolisme utama primer. Senyawa kimia sebagai hasil metabolit sekunder telah banyak digunakan sebagai zat warna, racun, aroma makanan, dan obat herbal. Penggunaan obat herbal dapat menjadi salah satu pilihan untuk mengobati, baik penyakit ringan seperti batuk dan demam, maupun penyakit kronis seperti asma, kanker, depresi, dan diabetes. Efek dari obat herbal tersebut disebabkan karena kandungan senyawa kimia yang terdapat di dalamnya. Efek farmakologis dan toksisitas obat herbal perlu diperhatikan sebagai keamanan dalam penggunaannya. Jenis senyawa kimia yang berbeda, seperti alkaloid, glikosida, flavonoid dan lain-lain, yang menjadi senyawa penting dalam obat herbal, sangat perlu untuk diketahui terlebih dahulu dalam menggunakan obat herbal Barnes. Sangat banyak jenis tanaman yang digunakan sebagai obat herbal. Tanaman kola merupakan obat herbal yang banyak digunakan di daerah Afrika, Asia, dan Amerika Selatan untuk meningkatkan nafsu makan dan mengatasi kelelahan. Biji tanaman kola diketahui mengandung kafein yang berfungsi sebagai zat perangsang Parker. Untuk mengetahui lebih lanjut manfaat tanaman kola sebagai obat herbal maka perlu dipelajari sintesis, mekanisme, dan efek farmakologis senyawa metabolitnya. Pembahasan Klasifikasi, Daerah Asal, dan Penyebaran Tanaman Kola Tanaman kola secara umum dikenal dengan nama kola, cola nut tree, dan cola. Di Indonesia, baik dalam konteks nama umum maupun nama daerah Medan, Sunda dan Jawa Tengah, tanaman ini juga dikenal dengan nama kola. Di Vietnam, dikenal dengan nama c[oo]ca. Klasifikasi tanaman kola dapat dilihat pada Tabel 1. Klasifikasi Cola spp Sumber: Sedangkan daerah penyebaran C. Tanaman kola menyebar ke banyak daerah tropis melalui biji yang dibawa oleh pedagang. Selanjutnya, tanaman ini menyebar ke Australia dan Amerika Selatan. Deskripsi Tanaman Kola Deskripsi umum tanaman Kola, yaitu pohon yang selalu berdaun hijau evergreen trees, kebanyakan berukuran kecil atau sedang. Daun berulir, berlekuk, memiliki tangkai daun. Buah tersusun dari kantung yang membujur. Batang bulat, berkayu, bercabang-cabang, permukaannya kasar, warnanya hijau kecoklatan Gambar 1a. Daun tunggal, tersebar, bertangkai, bentuknya bulat telur memanjang, ujung runcing, tepi rata, pangkalnya meruncing, panjang daun cm dan lebarnya cm, pertulangan menyirip dan warnanya hijau Gambar 1b. Bunga majemuk, bentuk malai, bentuk kelopak bunga kerucut, terdapat di ketiak daun, warna hijau bila masih muda dan coklat bila sudah tua, bentuk mahkotanya bintang, bertajuk lima, jumlah benang sari sepuluh yang tersusun seperti bintang, warnanya ungu, warna putik kuning, kuning keputih-putihan Gambar 1c. Buahnya kotak yang setiap tangkainya terdapat buah, bentuk buah bulat memanjang, di mana pada setiap buah berisi biji, panjang buah cm dengan diameternya cm, warnanya hijau. Bentuk biji bulat telur, keras, panjangnya cm dan lebar cm, selaput biji berasa manis dan wangi, warnanya merah Gambar 2. Ukuran biji lebih kecil 4 cm x 2. Cara Perbanyakan Tanaman Kola Tanaman kola biasanya diperbanyak dengan biji. Benih harus disemai di pembibitan sekitar bulan sebelum dimulainya musim hujan, tergantung panjang dormansi benih untuk memungkinkan pindah tanam bibit pada saat awal musim hujan. Benih ditanam pada kedalaman cm dengan posisi horizontal. Bibit tergantung pada akar tunggang sampai umur 9 bulan, sehingga kedalaman media harus cm. Jika tidak, tanaman harus ditanam di bedeng persemaian. Ketika berusia 12 bulan, akar sekunder bibit akan berkembang dan sudah bisa ditransplantasikan dengan bola akar yang diinginkan. Saat

pindah tanam, tinggi bibit harus sekitar 50 cm dan memiliki daun dewasa. Bibit yang telah di persemaian sampai 12 bulan mempunyai daun, dan harus dipangkas dengan tinggi cm. Selain diperbanyak menggunakan biji tanaman kola, juga bisa diperbanyak menggunakan stek batang. Kandungan Senyawa Bioaktif Tanaman Kola Buah kola mengandung tiga senyawa umum, yaitu kafein, katekin, dan tanin. Senyawa alkaloid lain juga terdapat dalam jumlah yang jauh lebih kecil, seperti theobromine dan betain. Kandungan senyawa kimia C. Kandungan senyawa kimia dari tanaman kola *Cola acuminata* Beauv. Duke dalam Burdock et al. Kafein merupakan senyawa alkaloid purin tipe Xanthine. Struktur senyawa kafein dapat dilihat pada Gambar 3. Struktur senyawa kafein Sumber: Kennedy dan Wigthman, Lintasan biosintesis senyawa kafein yang merupakan senyawa alkaloid adalah melalui lintasan asam shikimat. Dari fotosintesis karbohidrat yang dihasilkan bisa masuk ke lintasan pentosa fosfat atau pada proses glikolisis. Setelah dari lintasan pentosa fosfat dan proses glikolisis, lalu ke lintasan asam shikimat. Dari lintasan asam shikimat masuk ke asam amino aromatik, kemudian masuk ke senyawa yang mengandung nitrogen. Dari proses glikolisis juga bisa masuk ke asam amino alipatik Gambar 4. Sebagai senyawa alkaloid, kafein dibiosintesis di mitokondria dan disimpan di kloroplas. Mekanisme Kerja Senyawa Kafein Berdasarkan beberapa percobaan yang pernah dilakukan, diketahui bahwa kafein memiliki efek farmakologis meliputi diuretik, stimulasi otot jantung, relaksasi otot polos, stimulasi sekresi asam lambung, meningkatkan asam lemak bebas dan kadar gula dalam plasma, menghambat reseptor adenosin di otak, pembuluh darah, ginjal, dan saluran gastrointestinal Burdock, Kafein merupakan antagonis kompetitif yang menghambat reseptor adenosin A1 dan A2 yang mengakibatkan peningkatan aktivitas dopamine dan glutamatergik di otak. Kafein juga memiliki efek vaso-konstriksi di sekeliling aliran pembuluh darah otak dengan menghambat reseptor pembuluh darah adenosin A2a Kennedy dan Wigthman, Efek samping yang terkait dengan minuman yang mengandung xanthine, yaitu sulit tidur, gelisah, gemeteran, jantung berdebar, dan sakit kepala. Penggunaan biji kola dilarang bagi penderita hipertensi, penderita penyakit jantung, ibu hamil, dan menyusui bisa tersekresi dalam air susu karena kandungan kafeinnya Barnes, Buah yang jatuh harus segera diambil. Kulit dibuka dan biji ditumpuk serta sering disiram dengan air. Mantel biji kemudian meluruh dengan cepat dan setelah beberapa hari dapat dibersihkan, sehingga biji bersih tanpa cedera eksternal yang akan mengurangi kualitasnya. Setelah panen, biji kola disimpan dalam keranjang dan secara teratur diaduk dan diperiksa jika terjadi serangan serangga. Selama periode ini, yang berlangsung beberapa hari, biji akan menjadi kering dan mengalami masa dormansi. Biji dijaga agar berada dalam wadah kedap udara sehingga dapat mengurangi metabolisme karena peningkatan dari CO₂. Di samping itu, juga mencegah perkembangan dan serangan kumbang penggerek biji. Di Indonesia dan Amerika Selatan, hasil panen biji biasanya diperlakukan seperti kakao, yaitu dikeringkan Gambar 6. Biji kola yang sudah dikeringkan. Gambar diakses dari tokopedia. Kegunaan dan Cara Penggunaan Tanaman Kola Dalam pengobatan tradisional, biji tanaman kola digunakan sebagai stimulan, obat kuat, dan astrigen. Efek stimulan didapat dengan cara mengunyah biji kola segar. Saat dikunyah, tanin dari buah kola menjadi astringen zat yang memberi rasa pahit di dalam mulut, meskipun ini segera menghilang dan berubah menjadi rasa manis sebagaimana tanin kehilangan efeknya. Pada saat yang sama, alkaloid dikeluarkan oleh pengaruh enzim dan memberikan efek merangsang. Ekstrak dari biji kering C. Dosis yang diperbolehkan, yaitu, tepung kotiledon g sebagai jamu yang direbus 3 kali sehari Gambar 7 , ekstrak cair 0. Gambar diakses dari <https://www.jendelaipetekseri.com> Hasil saringan diminum sekaligus. Selain itu, juga bisa sebagai penyegar badan dan obat migrain. Kesimpulan Tanaman kola merupakan salah satu tanaman yang berpotensi sebagai tanaman obat. Senyawa yang paling dominan adalah senyawa kafein yang disintesis melalui lintasa asam shikimat, disintesis di mitokondria dan disimpan dalam kloroplas. Daftar Pustaka Barnes, J. Herbal Medicines Third Edition. *Cola acuminata* Schott ET Endl. Safety assessment of kola nut extract as a food ingredient. Food and Chemical Toxicology, Herbal extracts and phytochemicals: Advances in Nutrition, 2: Jalur pembentukan dan kegunaannya [Internet]. Jendela Iptek Seri

2: Poisonous plants, mushrooms | Queensland Poisons Information Centre

Plant Resources of South-East Asia, No 16, Stimulants. Edited by H. A. M. van der Vossen and M. Wessel. Leiden, The Netherlands: Backhuys Publishers (), pp.

In this study, the antioxidant, antityrosinase and antibacterial properties of fresh and Received 30 September processed leaves of *Anacardium occidentale* cashew and *Piper betle* betel were analysed and Received in revised form evaluated. The outstanding AOP Betel of fresh cashew leaves far exceeded those of betel leaves, including temperate culinary Blanching herbs of rosemary, thyme and marjoram. Tyrosinase inhibition of fresh cashew leaves was high while betel leaves exhibited an enhancement of tyrosinase activities. For betel leaves, tyrosinase inhibition remained unchanged. Results showed that fresh cashew and betel leaves inhibited both Gram-positive and Gram-negative bacteria tested. Blanched and microwave-treated cashew leaves exhibited strong antibacterial activity with those of betel leaves showed variable effects. Blanching water of cashew leaves also possesses antibacterial activity. The enhancement of tyrosinase activities of betel leaves, and leaching of bioactive compounds with antioxidant and antibacterial properties into the blanching water warrant further investigations. Among the herbs consumed as ulam are Indonesia. Served as a side dish or as an ingredient in specialty cashew and betel leaves. Leaves undersuction and stored at 4 1C for further analysis. When young, they are pliable and reddish, 10 g and processed herbs 3 g were powdered with liquid and are dark green and leathery with prominent yellow veins nitrogen in a mortar and extracted with mL of methanol, when mature. Traditionally, cashew leaves have also been three times for 1 h each time. Stems are swollen at the 2. Processing of herbs nodes. Leaves are alternate, simple and yellowish green to bright green with 2 or 3 pairs of secondary veins. Betel leaves are Herbs were blanched by immersing 1 g of sample in 50 mL of a specialised type of ulam, best known as an essential compo- boiling water for 30 s. The blanched samples retained on the nent of betel quid, consisting of areca nut slices wrapped in fresh sieve were wiped dry and extracted while the blanching betel leaves with slaked lime, tobacco or spices added for water was kept for analysis of phenolic content. Betel leaves are supposed to amelio- treatment of herbs involved placing 1 g of sample in rate bad breath, improve vocalisation, harden the gum, and a microwave oven â€” V, 50 Hz at the centre position prevent indigestion, bronchitis, constipation, congestion, cough for 30 s. The species has been reported to possess anti- microbial, insecticidal, antioxidant, antinociceptive, antidiabetic, gastroprotective and anticoagulant properties Arambewela, 2. Although the antioxidant properties of tropical culinary herbs Fresh and processed herbs were analysed for phenolic con- are fairly well studied, little is known on the other bioactivities. The objective of our study was to analyse and evaluate nium chloride and molybdate assays as described by Chan, the antioxidant, antityrosinase and antibacterial properties of Kong, Yee, Chua, and Loo a, b. Antioxidant activity fresh and processed leaves of cashew and betel. Materials and methods assays following the procedures of Chan et al. Total phenolic content TPC was assessed using the Folinâ€” 2. Herbs Ciocalteu FC assay. After incubating for 30 min in the dark, Young cashew leaves are pliable and reddish in colour while absorbance was measured at nm. TPC was expressed as betel leaves are bright green and heart-shaped with 2 or gallic acid equivalent GAE in mg per g of sample. Extract 1 mL is added into test 2. Extraction tubes containing 4 mL of water. Sodium hydroxide solution 2 mL, 1 M herbs 0. Food Bioscience 6 17 â€”23 19 10 mL. Tyrosinase inhibi- temperature for 10 min. TFC was expressed as quercetin 2. Molybdate reagent was prepared by disc-diffusion method as described by Chan, Kong, Yee, Chua, dissolving Agar cultures of Gram-positive bac- gen phosphate, and 7. CQAC was expressed as mg chlorogenic acid swab. Different placed onto the inoculated agar ensuring even distribution to dilutions of extracts 1 mL were added to 2 mL of DPPH avoid overlapping of zones. After incubation overnight at 5. Absorbance was measured at 37 1C, the minimum inhibitory dose MID or minimum nm after 30 min. Statistical analysis Ferric reducing power FRP was measured using the potassium ferricyanide assay. To each diluted aliquot, mL of ferric chloride solution 0. After 30 min, absorbance was measured at 3. Results and

discussion nm. Different dilutions of extracts 1 mL were antioxidant activity of fresh leaves of A. Phenolic content of cashew leaves 0. AOP values of A. Assays were conducted in a well microtiter kaempferol 3-O-glucoside, kaempferol 3-O-arabinofuranoside, plate and a plate reader was used measure absorbance at quercetin 3-O-glucoside and quercetin 3-O-galactoside Mohd nm, with nm as reference. Anacardic acids, cardanols and cardols dimethyl sulphoxide DMSO. Each well contained 40 mL of are the major alkyl phenols of cashew fruits Trevisan et al. Each confers them greater antioxidant capacity. It has been reported sample was accompanied by a blank that had all the compo- that besides being a potent scavenger of reactive oxygen nents except L-DOPA. Results were compared with a control species, anacardic acids also inhibit generation of superoxide 20 Food Bioscience 6 17 23 Table 1 23 Phenolic content and antioxidant activity of fresh and processed leaves of *Anacardium occidentale* and *Piper betle* fresh weight equivalent. Figures in brackets are the phenolic content of blanching water. ANOVA does not apply between herbs. Lower CEC50 values mean stronger ferrous ion chelating ability. Declines in oxidants leached varies with the species. The increment may also be due to the hydrolysis of of A. Microwave energy could have increased respectively Oboh, Loss in AOP during of polyphenol oxidase activity in samples due to microwave blanching can be due to solubilisation of phenolic com- irradiation Rodriguez-Lopez et al. Food Bioscience 6 17 23 21 3. In the nervous system, tyrosinase 2. Compared to mine by DOPA decarboxylase. Since, tyrosinase is one of the fresh cashew leaves, tyrosinase inhibition was not affected by essential enzymes to produce dopamine, P. Previous studies on the tyrosinase inhibition or comparable to that of fresh leaves. Previous studies on the 3. Antibacterial activity tyrosinase inhibition or enhancement have been based on fresh plant samples. Results showed that fresh leaves of A. Based on minimum inhibitory dose MID , B. Various mechan- Blanched cashew leaves exhibited stronger antibacterial isms of tyrosinase inhibition have been proposed. Chelating activity with MID of 0. Microwave-treated cashew leaves tyrosinase inhibitors share structural similarities with the similarly displayed strong antibacterial activity with MID of natural substrate, which allow them to compete with the 0. Like fresh cashew, Jeong et al. Anacardic acids, 2-methyl cardols, and inhibition of S. Blanch- Yokokawa, ; Kubo, Anacardic acids act as a direct ing enhanced inhibition against E. Antibacterial activity of microwave-treated leaves was tyrosinase activities of betel leaves. The tyrosinase enhance- stronger against B. Its inhibitory in compounds such as apigenin, hyperosid and icariin effect was stronger against Gram-positive bacteria 0. Table 2 23 Tyrosinase inhibition activity of fresh and In general, the MID of the blanching water was weaker that processed leaves of *Anacardium occidentale* and *Piper betle* fresh weight equivalent. The potent antibacterial properties of cashew leaves have yet Cashew Fresh The , cashew and betel leaves inhibited both Gram-positive enhancement of tyrosinase activities negative inhibition of betel and Gram-negative bacteria. Compounds responsible for the leaves denotes melanogenic or skin-darkening properties. Herb Fresh and Gram-positive bacteria Gram-negative bacteria processed *Brevibacillus Micrococcus Staphylococcus Escherichia Pseudomonas Salmonella brevis luteus cohnii coli aeruginosa enterica* Cashew Fresh 0. Figures in brackets are the MID of blanching water. Although blanching caused a decline in the AOP of cashew r e f e r e n c e s leaves, antibacterial activity was enhanced. Microwave enhanced both the antioxidant and antibacterial properties of cashew leaves. It is likely that blanching could have Alam, N. Phenolic compounds concentration and appraisal of reduced enzyme-mediated degradation and microwave irra- antioxidant and antityrosinase activities from the fruiting diation might have led to the formation of bioactive phenolic bodies of *Pleurotus eryngii*. Advances in Environmental Biology, compounds at high temperature. Antibacterial activity of sesses antibacterial activity is most interesting as we often extracts from some edible plants commonly consumed in pour away the water after blanching vegetables and herbs Asia. International Journal of Food Microbiology, 80, 23 It also reminds us that Andarwulan, N. Polyphenols, carotenoids, and ascorbic acid in underutilized medicinal vegetables. Journal of Functional Foods, 4, 23 International Journal of Food Science and Technology, 41, 1023 Values of phenolic content and antioxidant activity of fresh Chan, E. Chiang Mai Journal betel leaves with leaching of phenolic compounds into the of Science, 39, 23 AOP of microwave-treated leaves of cashew Chan, E.

3: Catalogue: Botany

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4: Licuala rumphii - Palmpedia - Palm Grower's Guide

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November 20, ; Accepted: March 16, ; Published: May 15, Copyright: This is an open access article distributed under the terms of the creative commons attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited. Tea plants are shrubs or small trees that originate from the mainland of East Asia, the Indian subcontinent and Southeast Asia but are now cultivated throughout the world in both tropical and subtropical regions. Left to grow naturally, tea plants can become trees of 6 to 10 m in height 2. Cultivated tea plants are often subjected to periodical pruning to a height of 1 m in order to facilitate leaf harvest and to maintain high levels of productivity. Tea plant pruning is performed every 3 years to keep the plants in a vegetative state 3. This pruning is employed because tea plants older than 3 years will produce smaller leaves and fewer shoots, decreasing the economic value of the tea crop 4. The process of trimming tea plants produces leaves that are wasted and usually cover the growing shoots. Therefore, it would be more profitable to use trimmed tea leaves as feed for animals, especially poultry, given that tea leaves contain essential nutrients. Tea leaves have fairly high nutritional value and contain antioxidant compounds polyphenols that can improve poultry health 6. According to Cabrera et al. Tea leaves also contain other compounds, such as carotenoids, which can lower cholesterol levels in the blood 8. Tannin is a secondary metabolite compound in plants and belongs to a group of polyphenol compounds that can form complex compounds with other molecules, such as carbohydrates and proteins, in the digestive tract to impede their absorption In another experiment by Anita et al. One of many ways to reduce the content of anti-nutritional substances is to subject the tea leaves to immersion 12 , According to Kawamoto et al. Based on the above evidence, there seems to be an opportunity to utilize the waste tea leaf byproducts from tea plantations because pruned tea leaves still have good nutritional value. This research therefore, aimed to ascertain the importance of hot water immersion at different h on nutritive value of waste tea leaves. The survey of the availability of waste tea leaves from tea plantations was performed in West Sumatra province, Indonesia from 20, February, March, on lands owned by small holders, the government and a private company. Data were collected through personal interview and observation. Interviews were performed to obtain secondary data from each tea plantation owner, such as the size of the tea plantation area, the rate of waste tea leaf production, the ownership of the tea plantation small holder, government or private company , the varieties of tea planted and the cycle of tea pruning performed. Waste tea leaf production was quantified by weighing pruned tea leaves. The tool used to measure tea leaves in a sample area was a 1 m² quadrant, which was randomly placed at 9 points within the tea plantation. The tea leaves within the quadrant area were pruned by knife and then weighed. The weight of tea leaves in each of the 9 quadrants was summed and subsequently divided by 9 to obtain the average tea leaf production in every 1 m². Finally, the tea leaf production per hectare was calculated by multiplying the average tea leaf production in a 1 m² by 10, Experiment 2 Immersion of waste tea leaves in fresh and hot water: Preparation for immersion of waste tea leaves: Before immersion, waste tea leaves were sun dried to obtain their dry weight. Water was heated using a hot plate. Dry waste tea leaves were divided into units of g and then put into jars for immersion according to their assigned treatment for 6, 12, 18 and 24 h. Tannin content was measured by Lowenthal-procher 20 , while dry matter , organic matter , crude protein and crude fiber were quantified by proximate analysis according to AOAC The second treatment factor was immersion duration 6, 12, 18 or 24 h. The tea plantations in Indonesia were owned by the small holders, the government and a private company. Most tea plantations belong to small holders, who owned a combined area of 2, ha, while the government and a private company owned Varieties of tea plant and tea pruning time in West Sumatra: This variety *Camellia sinensis* contains high levels of polyphenols, especially catechins 23 , vitamins such as A, B and C and

minerals such as fluoride 24 and demonstrates high leaf production. This variety provides the advantage of high productivity by growing quickly and producing larger leaves. The pruning regimen for tea leaf production is every 3 years with a rotation system that depends on near-daily pruning. Chemical composition of waste tea leaves: The following are results from the analysis of tannin content and the proximate analysis of waste tea leaves Table 1. Tea plantation area and waste tea leaf production: The total tea plantation area in West Sumatra was 4, The size of West Sumatera tea plantations decreases annually. In , the total area of tea plantations was 4, ha1, while in , it decreased to 4, This finding is due to the conversion of tea plantations into other forms of agricultural production and settlement. Potential of waste tea leaves as animal feed: The potential of waste tea leaves as poultry feed can be illustrated as follows: Waste tea leaf production totaled Tannin, dry matter , organic matter , crude fiber and crude protein content before processing of waste tea leaves DM: Organic matter , CF: Crude protein Table 2: Tea plantation areas and production of waste tea leaves in West Sumatra Ha: Waste tea leaf production Table 3: Meanwhile, Anita et al. Processing of waste tea leaves Effect on tannin content: The interaction between water temperature and immersion duration indicated that fresh water immersion for 6 h resulted in the highest tannin content. When the duration of immersion was increased to 24 h the tannin content of waste tea leaves decreased. This indicates that the longer the immersion in hot water, the lower the tannin content. This decrease is due to the high solubility of tannin in water at high temperature s. According to Makkar and Becker 30 , high temperature is more effective at reducing tannin levels, while Rehman et al. Effect on dry matter DM content: The highest dry matter content was at 6 and 12 h. Longer immersion times decreased DM content. This is likely because dry matter consists of organic and inorganic matter 32 and organic matter contains carbohydrates that are soluble in water 33 , The dry matter content will decrease further with longer immersion. Decreases in dry matter content could also occur because of the loss of dissolved substances such as proteins 36 , vitamins 37 and soluble fiber 38 in water after 18 and 24 h of immersion. Effect on organic matter OM content:

5: Potential of Waste Tea Leaves (*Camellia sinensis*) in West Sumatra to Be Processed into Poultry Feed

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6: CiNii Books Author - Wessel, M.

Description: Interdisciplinary in scope, Economic Botany bridges the gap between pure and applied botany by focusing on the uses of plants by people. The foremost publication of its kind in this field, Economic Botany documents the rich relationship that has always existed between plants and people around the world, encompassing the past, present, and potential uses of plants.

Kew Species Profiles General Description Tea is one of the most important non-alcoholic beverages in the world, and over three million tonnes are grown annually. Tea is a shrub grown to produce a beverage made from its leaves. It is appreciated for its stimulant properties and health benefits, and as the centre of social rituals such as the Japanese tea ceremony and British teatime. Two varieties are recognised; *Camellia sinensis* var. For centuries it was thought that black and green teas came from different plants. In fact they come from the same species, but black tea is fermented. **Species Profile Geography and distribution** The origin of tea is not clear. An evergreen shrub, which can grow up to 17 m high. In cultivation, it is usually kept below 2 m high by pruning. Bright green, shiny, often with a hairy underside. Scented, occurring singly or in clusters of two to four. Brownish-green, containing one to four spherical or flattened seeds. **Varieties** *Camellia sinensis* var. Its leaves are used to produce green tea and China black tea. It is a less hardy variety with larger, rather droopy, leathery leaves, which are used to make Assam Indian black tea. *Camellia sinensis* has been considered an invasive pest species in a nature reserve in Tanzania. There are also reports of it spreading into Madagascan forests where it may have detrimental effects on the regeneration of native forests which are important lemur habitats. **Uses** **Early uses of tea in China** In China, tea has been used as a medicinal infusion, for chewing and as a pickle for over 4, years. During the 8th and 9th centuries its use was widespread in courtly and monastic circles and a tea culture developed. **Tea and social interaction** It has been suggested that tea spread so quickly, and was absorbed into so many different cultures, because of the way it is served - its preparation gives the chance for social interaction and the development of elaborate ceremonies. By the early s, in the heyday of the East India Company, Britain was drinking its way through nine million cups of tea a year. **Medicinal uses** In China, the medicinal effects of tea have a history dating back almost 5, years. The use of tea in traditional Chinese medicine is well documented and it is suggested that it could be used as a cure for over illnesses. Tea is not an important medicine in the main medical traditions of South Asia. Medicinally, tea has been most used as a stimulant, as an astringent lotion which may be used as a gargle or injection, for some digestive problems and to reduce sweating in fevers. In Tamil Nadu, tea leaves have been used homeopathically for mania, paralysis, nervousness, neuralgia and sleeplessness. Caffeine is included in small doses in some over-the-counter medicines for its stimulant effect, and is often combined with medicines that treat pain, such as aspirin. An infusion of tea leaves was once used as a remedy for insect bites. Excessive intake of caffeine can cause headaches and anxiety. Regular consumption of large amounts of caffeine, aminophylline or theophylline by breastfeeding mothers can cause irritability and poor sleeping patterns in the infant. Drinking large amounts of theophylline and aminophylline can cause many side effects, including heart problems such as palpitations, sickness, insomnia and convulsions. Toxic effects are more likely to occur when theophylline and aminophylline are taken at high doses or together with certain other medicines. It has been reported that there may be some link between cancer of the oesophagus and excessive tea drinking and the resulting high consumption of condensed tannin compounds. Drinking tea may have diuretic effects, largely due to the caffeine, and tea may also inhibit the absorption of iron in the gut. Tea contains the compound theophylline, which is used in a licensed medicine for the treatment of respiratory diseases such as asthma. Tea also contains flavonoids, compounds reported to have anti-oxidant properties and which may be beneficial to health, such as in the prevention of heart disease and cancer. Tea flavonoids are also reported to reduce inflammation and to have antimicrobial effects. Some studies suggest that tea may help prevent tooth decay. Tea is also used in some cosmetic products for its astringent effect. The chemical composition of tea

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may vary depending on a number of factors, such as the conditions in which the plant is grown and how the leaves are processed. Seed storage The Millennium Seed Bank Partnership aims to save plant life worldwide, focusing on plants under threat and those of most use in the future. Seeds are dried, packaged and stored at a sub-zero temperature in our seed bank vault. Mulch is applied around the bushes to encourage healthy growth, and in the spring they are fed with a controlled-release fertiliser. The soil they are grown in has a low pH, which suits tea as it requires acid soil. The bushes are watered during long dry spells. The plants are slow-growing and produce white flowers in the autumn. These are available to researchers by appointment. Dried specimens of C.

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The dried leaves (green mate), dried thin branches and leaves (yerba mate) or roasted dried leaves (roasted or red mate) are used (van der Vossen & Wessel,). The first records of next two "newcomers" are not older than years and their commercial usage starts at first half of the past century.

8: 檳榔 (Betel peper) Piper betle L.

Plant Resources of South-East Asia No. 16 Stimulants. Backhuys Publisher, Leiden, the Netherlands. p. Many Special Thanks to Ed Vaile for his long hours of tireless editing and numerous contributions.

9: Camellia sinensis (L.) Kuntze | Plants of the World Online | Kew Science

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