



SDI Review Form 1.6

Journal Name:	International Journal of Biochemistry Research & Review
Manuscript Number:	Ms_IJBCRR_43796
Title of the Manuscript:	Evaluation of nutritive value of two traditional African vegetables (<i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i>) commonly consumed in Côte d'Ivoire.
Type of the Article	Original Research Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

(<http://www.sciencedomain.org/page.php?id=sdi-general-editorial-policy#Peer-Review-Guideline>)

PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	Lines 28-30. Although there is few information about nutritional composition of <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i>, I suggest to mention some of the available articles, such as: -https://doi.org/10.5897/JMPR11.621, -Ndlovu, J, Afolayan, AJ (2008). Nutritional analysis of the South African wild vegetable <i>Corchorus olitorius</i> L. Asian J Plant Sci - http://dx.doi.org/10.4314/apra.v5i2.49827 Lines 31-33. I suggest to remove this paragraph, because the aim of study was not post-harvest technologies. Section Results Authors need to rewrite this section, because it is confusing and the English should be improved Section discussion. I expected that authors compared their results with other articles, which had studied the same species; however, authors only compared their results with one study. Furthermore, authors described in excess the effects of fat, fiber, minerals and other compounds in human body, which is a topic already described a lot in the literature, for example: - "high contents of lipid in human diet are principal sources of obesity and other relative diseases." But this depends in the fatty acids profile present in food, and probably leafy are a good source of polyunsaturated acids. Furthermore, the amount of fat is low compared with other foods. - "fiber and carbohydrate content of both the leaves of <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i> observed in this study are lower to reported values for a number of tropical plants". "But the leaves of <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i> are a good source of fiber and carbohydrate" So, the values of fiber is lower than other plants, but it is a good source of	Lines 28-30: Among these plants, there are <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i>, which negligence has been attributed to insufficient information on potential to serve as food security [10]. These vegetables can be used to alleviate micronutrient deficiency if cultivated, popularized and improved [11] Section Results Line 100-108 3.1.1. Physico-chemical composition The physico-chemical content of the leafy vegetables is presented in Table 1. Highly significant ($P = .05$) differences were observed for all the variables between <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i>, except for moisture. The two leaves were acidic ($pH = 2.45 - 2.81$) and had good energetic value (180.62 – 236.00 kcal/100g). The leaves of <i>Hibiscus sabdariffa</i> had the highest carbohydrates values content with 42.97%. <i>C. olitorus</i> and <i>H. sabdariffa</i> had 4.35% and 4.75% respectively as lipid contents. The proteins content was higher in <i>C. olitorus</i> (21.00%) than those of 13.15% in <i>H. sabdariffa</i> leaves but fibers content was lowest in <i>H. sabdariffa</i> (32.01% vs 41.67% for <i>C. olitorus</i>). Ash content was lower in <i>C. olitorus</i> (7.00%) than <i>H. sabdariffa</i> (9.14%). Line 116-121 3.1.2. Minerals compound The mineral content of the leafy vegetables is presented in Table 2. and differed significantly ($P = .05$) between <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i>. The leaves are very important source of minerals. Calcium in <i>H. sabdariffa</i> leaves (1.41%) was higher than the one of <i>C. olitorus</i> (0.71%) and iron content in <i>C. olitorus</i> (4.96%) was lower than <i>H. sabdariffa</i> (5.41%). Besides magnesium content in <i>H. sabdariffa</i> 2.00% was more than those of <i>C. olitorus</i> (1.31%). The leaves of <i>Hibiscus sabdariffa</i> had the highest



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	fiber? Compared to what? This paragraph is confusing. English should be improved. Some sentences are not correct (ex: line 104 “ excepted moisture” ; p=.05; line 106 “good energizing source”, line 155 “But the consumption of vegetables is healthy for the body since excess fat in the body causes cardiovascular disorders”)	phosphorus value content with (0.62%) vs 0.44% <i>C. olitorus</i>. Line 127-133 3.1.3. Anti-nutritionals compounds The antinutrients of <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i> are shown in Table 3. They differed significantly ($P = .05$). Phytates and Polyphenols content were higher in the leaves of <i>C. olitorus</i> than in <i>H. sabdariffa</i> with the values of 0.05 g/100 g and 1.40 g/100 g respectively while oxalates were abundant in the leaves of <i>H. sabdariffa</i> (1.23 g/100 g). The different ratio of oxalate/calcium and the phytates/calcium ratios were lower than 2.5. All the samples analyzed had their oxalates/iron and phytates/iron ratio less than 1. Section discussion Line 141- 188 3.2. Discussion The specific nutrients that are close to reported value by Korotimi <i>et al.</i> [21]. These authors reported a higher moisture content for <i>C. olitorus</i> leaves compared to values in the present study. The relatively high moisture contents reveal that the studied leafy vegetables need care for appropriate preservation as they would be prone to deterioration [22]. Indeed, the high moisture content may induce a greater activity of water soluble enzymes and co-enzymes involved in metabolic activities of these leafy vegetables [23]. The results of lipids contents are in conformity with similar studies on leafy vegetables with range of 0.5-7.62 % [23]. The values of the fat (in %) for the leaves of <i>C. olitorus</i>, and <i>H. sabdariffa</i> were 4.35 and 4.74 respectively which were moderate in amount when compared to those of <i>Talinum triangulare</i> (5.09), <i>Amarantus hybridus</i> (4.80) [25]. However high contents of lipid in human diet are principal sources of obesity and other related diseases. Dietary fat composition can interfere in the development of obesity due to the specific roles of some fatty acids that have different metabolic activities, which can alter both fat oxidation and deposition rates, resulting in changes in body weight and/or composition [26]. A diet providing 1.20% of its caloric of energy as fat is said to be deficient for human being as excess fat consumption is implicated in certain cardiovascular disorders [23, 27]. The leaves of <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i> have higher level in protein These leaves could be used as food protein supplement. The fiber and carbohydrate content of both the leaves of <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i> observed in this study are lower than reported values for a number of tropical plants [28]. It reported that carbohydrate provides energy to the cells in the body, particularly the brain, which is the only carbohydrate-dependent organ in the body [29]. It is necessary for maintenance of the plasma level, it spares the body protein from being easily digested and helps to prevent the using up of protein. [30] The consumption of selected leafy vegetables could be beneficial for populations because the high fiber content of foods facilitates digestion by increasing gastrointestinal function and preventing constipation, thereby, reducing the incidence of metabolic diseases such as diabetes mellitus and hypercholesterolemia. It also contributes to the prevention of colon cancer by binding to carcinogenic chemicals away from the cells that cover the colon [31]. The content in minerals of this study defers the one of [32]. The differences in minerals content may be due to leaf age at harvest, or the mineral fertilizer used in culture soil mineral composition and the proportion of individual mineral absorption by each plant and cultural practices [32-33]. The leaves vegetables may be considered as good sources of bioavailable minerals such as calcium (Ca), iron (Fe), magnesium (Mg) and phosphorus (P) [34]. These micro-nutrients are very important in the body. Calcium is important for construction and maintenance of bone and normal function of nerves and muscles [34]. Iron plays a role in the production of hemoglobin, myelin,
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		melanin and it also keeps thyroid gland functioning normally [35]. Iron is essential for hemoglobin formation, normal functioning of central nervous system and in the oxidation of carbohydrates, protein and fats [36]. The deficiencies of magnesium are unusual but may lead to bone deformities, rashes, reduced hair growth [37]. Phenolic compounds concentration may vary with cultivar, agronomic conditions, maturity stage, variety, environmental conditions, fruit season, light exposure and storage conditions [38]. The phytochemical screening of <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i> leaves revealed presence of polyphenols. Consumption of polyphenols has been linked to lowered risks of many chronic diseases including cancer, cardiovascular diseases, chronic inflammation and many degeneration diseases [39]. Polyphenolic antioxidants from dietary sources are frequently a topic of interest due to widespread scientific agreement that they may help lower the incidence of certain cancers, cardiovascular and neurodegenerative diseases, and DNA damage and even may have antiaging properties [40]. Phytochemicals in fruits can have complementary and overlapping mechanisms of action, acting as antioxidant agents, stimulants of the immune system, regulators of gene expression in cell proliferation and apoptosis, intermediaries in hormone metabolism, as well as antibacterial and antiviral agents. They play a role in prevention of degenerative diseases, particularly cardiovascular diseases and cancers [41]. The reductions in oxalates and phytates contents could improve the health status of consumers. Indeed, oxalates and phytates chelate divalent cations such as calcium, magnesium, zinc and iron, thereby reducing their bioavailability [42]. In view of the highest oxalates and phytates of <i>Hibiscus sabdariffa</i> leaves, may appear as a detoxification procedure by removing these anti-nutritional factors. To predict the bioavailability of calcium and iron, anti-nutrients to nutrients ratios were calculated. The calculated oxalates/Ca and phytates/Ca ratios in all the species were below the critical level of 2.5 known to impair calcium bioavailability [43]. It was also observed that the calculated phytates/Fe ratios of samples were above the critical level of 1. This implies that the phytates of these leafy vegetables may hinder iron bioavailability [44]. However, the phytates/Fe ratios could be considerably reduced after processing such as soaking, boiling or frying [45].
Minor REVISION comments	Line 18. Change “prerequisite for human development” for “requirementfor human development” Line 28. Put space between words “inone” Line 43. How do the authors know that fresh leaves are ripe? Line 53. Why the fresh leaves were dried first in the air and then in the oven? Lines 62. How long was the Soxhlet extraction? Line72. Put the reference at the end of the sentence. Table 1. Change commas by points. When the results were describedit is not necessary to put the standard deviation. I suggest to only mention means, when authors are describing the obtained results. Line 111. Fiber with lowerletters, Line 131. Polyphenols with lowerletters Line 146. Until this moment, authors didn't refer the common name for <i>Corchorusolitorus</i>(jute mallow). So, I suggest to write it at the beginning. References: Authors need to standardize references, for example: - Missing volume in some references: Refs 4,6, - Missing year. Ref. 32 - The abbreviations of some journals are wrong: Ref 9 "J. of Food Com and Anal.", Correct:. Food Compos. Anal.; as well as, Ref 14,18, 21, 23, 40, 41.	Line 18: requirement for human Line 28: in one delete Line 51: to remove the surface water Line 60: at 7 hours Line 70: American Association of Cereal chemist's method Table 1. Change commas by points Line Line 116-121 3.1.2. Minerals compound The mineral content of the leafy vegetables is presented in Table 2. and differed significantly ($P = .05$) between <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i>. The leaves are very important source of minerals. Calcium in <i>H. sabdariffa</i> leaves (1.41%) was higher than the one of <i>C. olitorus</i> (0.71%) and iron content in <i>C. olitorus</i> (4.96%) was lower than <i>H. sabdariffa</i> (5.41%). Besides magnesium content in <i>H. sabdariffa</i> 2.00% was more than those of <i>C. olitorus</i> (1.31%). The leaves of <i>Hibiscus sabdariffa</i> had the highest phosphorus value content with (0.62%) vs 0.44% <i>C. olitorus</i>. Line 127-133 3.1.3. Anti-nutritional compounds



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		The antinutrients of <i>Corchorus olitorus</i> and <i>Hibiscus sabdariffa</i> are shown in Table 3. They differed significantly ($P = .05$). Phytates and Polyphenols content were higher in the leaves of <i>C. olitorus</i> than in <i>H. sabdariffa</i> with the values of 0.05 g/100 g and 1.40 g/100 g respectively while oxalates were abundant in the leaves of <i>H. sabdariffa</i> (1.23 g/100 g). The different ratio of oxalate/calcium and the phytates/calcium ratios were lower than 2.5. All the samples analyzed had their oxalates/iron and phytates/iron ratio less than 1 Line 108: lower Line 129: polyphenols Line 142: <i>C. olitorus</i> leaves References Line 293-294: 36 Adeyeye E, Otokili MKO. Proximate composition and some nutritionally valuable minerals of two varieties of <i>Capsicum annum</i> (Bell and cherry peppers). Discov. Innov. 1999;11:75-81 Line 293-294 Line 218-220: 4 Ehil� ES-J, Kouakou KN, Adam KC, N'Dri YD, N'guessan AG. Nutritional composition of five spontaneous wild plants used as human foods in C�te d'Ivoire areas (West Africa), a potential role in household food Security. Pakistan J Nutr. 2018;17(4):171.78. Line 223-225: 6 Yang RY, Keding GB. Nutritional contributions of important African indigenous vegetables. African indigenous vegetables in urban agriculture. In C. M. Shackleton, M. W. Pasquini & A. W. Dresche (Eds.), African indigenous vegetables in urban agriculture. London: Earthscan. 2009;2105�43. The abbreviations of journals Line 231-232: 9 McBurney RP, Griffin C, Greenberg DC. The nutritional composition of African wild food plants: From Pre-compilation to utilization. Food Compos. Anal. 2004 17:277- 89. Line 241-243: 14 Prosky L, Asp NG, Schweizer, TF, Vries, JW; Furda, I. Determination of insoluble, soluble, and total dietary fiber in foods and food products: Inter laboratory study. J. Assoc. Off. Anal. Chem. 1988;71:1017-023. Line 261-262: 22 Kwenin, WKJ, Wolli M, Dzomeku BM. Assessing the nutritional value of some African indigenous green leafy vegetables in Ghana. J. Anim and Plant Sci. 2011; 10:1300-305 Line 266-267: 24 Sobowale SS, Olatidoye OP. Nutritional potential and chemical value of some tropical leafy vegetables consumed in south west Nigeria. Int J Eng Sci Res. 2011; 3:55 -60. Line 302-303: 41 Umar KJ, Hassan, LG., Dangoggo SM, Inuwa, M, Amustapha MN. Nutritional content of <i>Melochia corchorifolia</i> Linn leaves. Int J Biochem Bio. 2007; 1:250-55. Line 310-311: 45 Ekop AS, Eddy NO. Comparative Studies of the level of toxicants in the seed of Indian almond (<i>Terminalia catappa</i>) and African walnut (<i>Coula edulis</i>). J. Class. 2005; 2:74-76.
<u>Optional/General</u> comments	Line 59. Change Association of official analytical chemist's method for AOAC method Line 74-75. Mineral with lowerletters	Line 57: Association of official analytical chemist's method Line 73: magnesium (Mg), iron (Fe), calcium (Ca), and phosphorus (P)