



ASSESSMENT OF ESSENTIAL AMINO ACID PROFILES OF SELECTED UNDERUTILIZED WILD EDIBLE FRUITS THROUGH UV-VIS SPECTROPHOTOMETER

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Abstract

The aim of this research is to evaluate the essential amino acid contents of some underutilized wild edible fruits of different districts of Odisha. An essential amino acid composition was evaluated using UV-VIS Spectrophotometer. As essential amino acids cannot be synthesized in the body, they must be obtained through diet. The adequate amounts of essential amino acid contents are required for the normal functioning and development of physiological processes. *Antidesma acidum*, *Flacourtia indica*, and *Walsura trifoliata* are predominantly contains methionine, tryptophan, isoleucine, valine, leucine and histidine. *Antidesma acidum* come out to be a good source of methionine 1241.7 ± 0.92 mg/100g dw and tryptophan 1589.7 ± 1.34 mg/100g dw content. Methionine acts as antioxidants and protects from ionizing radiation, detoxifying heavy metals and paracetamol poisoning. Tryptophan helps in making serotonin and melatonin. Highest isoleucine and valine profiling was noticed in *Flacourtia indica* 1124.6 ± 0.97 mg/100g dw and 907.5 ± 0.84 mg/100g dw. *Walsura trifoliata* was observed in a good amount of leucine 1219.4 ± 1.09 mg/100g dw and histidine 919.5 ± 0.89 mg/100g dw content. It is realized that leucine consumed in the eating routine is changed into a substance known as acetyl coenzyme A, a significant piece of the breakdown of carbohydrates and unsaturated fats in the body. Current research concluded that *Antidesma acidum*, *Flacourtia indica*, and *Walsura trifoliata* are more and high essential amino acid contents, which are alternative useful fruits for human beings. These fruits must be domesticated for commercial available in the market.

Keywords: *Antidesma acidum*, *Flacourtia indica*, *Walsura trifoliata*, methionine, tryptophan and Spectrophotometer

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DOI: 10.48047/ecb/2023.12.si10.00210

INTRODUCTION

Native plants have been customarily significant food hotspots for rustic populace. Leafy fruits and vegetables are great wellsprings of minerals, nutrients, carbohydrates, fats, proteins, and amino acids [1, 2]. Satisfactory admission of foods grown from the ground can forestall non-transmittable infections like diabetes, athero sclerosis and malignant growths [3]. Amino acids are by and large got from the most bountiful macromolecules found in natural frameworks called proteins. The non-essential amino acids can be combined in the body, while essential amino acids must be provided through food. A few amino acids like histidine, cysteine, methionine, lysine, and tryptophan go about as cancer prevention agents, and lack of essential amino acids causes obliteration of cells in grown-ups, causes log jam of improvement and development in youngsters and creates sicknesses [1,4].

Antidesma acidum Retz. is one of the wild eatable plants of western Ghats of Maharashtra has a place with family Euphorbiaceae. *Antidesma acidum* is a tiny deciduous tree or shrub. When ripe, the fruits are small, greenish yellow, silky, purple, and turn purple red. Fruits are ellipsoid to suborbicular or often broadly oblong in shape, somewhat laterally compressed, with a short terminal persistent style at the apex, 4 - 6 x 3 - 5 mm, glabrous, often white coloured; fruiting pedicels 2 - 3 mm long [5]. *Cordia dichotoma* Forst.f. is a kind of cordia. It is a little to medium-sized plant in the Ehretiaceae family. The natural product is yellow or pinkish yellow in variety, with a shing globose and ovoid drupe situated in a saucer-like expanded calyx. At the point when ready its fruits, it becomes dark tone and the pulps of natural products get viscid [6]. According *Flacourtia indica* is a natural restorative plant that is widely distributed in India and Bangladesh. Deciduous or seldom evergreen trees or bushes are polygamous and rarely deciduous. *Grewia tiliifolia* is a subtropical flowering plant of the tiliaceae family. It is a 20m tall medium-sized plant with simple and interchangeable leaves. The fruits are globose drupes, like to peas, with 2–4 lobes that split when ripe and contain 1–2 seeds. It is also known as dhaman [7]. *Lepisanthes rubiginosa* is a year-round blooming perennial plant. This shrub can attain a height of 2 to 3 metres and a length of 7 metres [8]. *Limonia acidissima* L. is a multipurpose restorative plant that has a place with the Rutaceae family. *Limonia acidissima* is a versatile medicinal herb or plant from India. The fruits are called berry and width of the berries are

2 to 5 inch. The shapes are round to oval, globose and enormous in size, with hard pericarp. The elective name of the natural product is called wood apple in light of the fact that the skin of the organic product is woody with a grayish white tone [9]. *Memecylon umbelatum* comes from melastomaceae family, which is a bush or a little tree. Fruits of *Memecylon umbelatum* are called berry and globose. The size of the berry is 6 mm in breadth. The shade of the berry is purplish dark, and the shapes are crown through rather unnoticeably with the calyx appendage which contains just seeds. The inclinations of the fruit products are thick and astringent [10]. The Melastomataceae family incorporates *Melastoma malabathricum* (L.) Smith. This is most regularly experienced as a little bush [11]. *Oxal scandens* Roxb. is a bush or little tree in the Olacaceae family. It's a relentless climber with few thistles. The natural products are sub-globose drupes. At the point when ready, the natural products are yellowish orange in variety, with the crescent calyx encasing the greater part of them. Organic products are beefy and yellow in variety, with a width of 0.8-1.5 cm. This plant can be tracked down all through tropical India [12]. The Moraceae family incorporates the plant *Streblus asper*. It is a little tree, otherwise called a bush. This tree's husk is light dark with greenish edges that become unpleasant as it ages. Berries are approximately encased by augmented sepals. At the point when ready, the fruit product is yellow and 5mm in diameter [13]. *Syzygium jambos* belongs to the Myrtaceae family and is a medium-sized plant.). The height of this plant ranges from 7.5 to 12 metres. *Syzygium jambos* is known as the rose apple due to its physical qualities and the perfume of the fruits [14]. *Walsura trifoliata* is a Meliaceae family little tree. Bark is a dim variety. The bark of youthful trees is corroded tomentose. Berries are ovoid or sub-globose in shape. When ready, the berries turns a radiant orange-yellow; the seeds are singular and implanted in a white succulent aril [15]. The motivation behind this exploration was to decide the essential amino acids, quantitative assurance and give a better healthy benefit to human populace. As a result, one can get quality protein from wild sources, which can be replenishment for malnourished children.

MATERIALS AND METHODS

Collection of Fruits

Wild palatable fruit products were gathered from various forest districts of Odisha.

Table 1: Collected area, districts and coordinates if studied fruits

Name of fruit samples	Collected Area	Name of District	Coordinates
<i>Antidesma acidum</i>	Muktaposi	Dhenkanal	20° 55' 10.9" N 85° 25' 45.6" E
<i>Cordia dichotoma</i>	Taptapani	Ganjam	19° 28' 57.6" N 84° 23' 37.5" E
<i>Flacourtia indica</i>	Phultota	Puri	19° 56' 56.0" N 85° 48' 25.9" E
<i>Grewia tilifolia</i>	Phultota	Puri	19° 56' 56.0" N 85° 48' 25.9" E
<i>Lepisanthes rubiginosa</i>	Ghatikia	Khurdha	20° 15' 46.6" N 85° 46' 07.3" E
<i>Limonia acidissima</i>	Sapua reserve forest	Nayagarh	20° 20' 37.7" N 85° 02' 55.6" E
<i>Memecylon umbellatum</i>	Ghatikia	Khurdha	20° 15' 46.6" N 85° 46' 07.3" E
<i>Melastoma malabathricum</i>	Kaimati	Dhenkanal	20° 40' 25.6" N 85° 40' 12.9" E
<i>Olox scandens</i>	Kapilash	Dhenkanal	20° 41' 42.2" N 85° 45' 28.5" E
<i>Strabulus asper</i>	Taptapani	Ganjam	19° 28' 57.6" N 84° 23' 37.5" E
<i>Syzygium jambos</i>	Lanjigarh	Kalahandi	19° 44' 25.6" N 83° 22' 38.9" E
<i>Walsura trifoliata</i>	Kuanrapur	Balasure	21° 21' 58.4" N 86° 53' 47.4" E

Sample Preparation

Before extraction, the clean fruit products were dried and ground into a fine powder.

Sample Extraction

Using a Soxhlet device, 10 g powdered fruit materials were extracted with 200 ml of absolute methanol for 16-18 hours at 60 degrees Celsius. The entire extraction procedure took 3 to 4 days. Only 20 ml of the 200 ml of extracted materials were saved for in vitro use and 30 ml was saved for future use [16].

Spectrophotometric analysis

Assessment of Methionine

Defatting of Fruit Samples

50ml of hexane was added to 10gm of powdered fruit samples and mixed for 12 hours before filtering for further spectrophotometric analysis [17].

Hydrolysis of Fruit samples

5gm powdered sample from the defatted samples was mixed with 6 N HCL and 0.1% phenol in a 5:1 ratio and maintained in a hot air oven at 150°C for six hours for the acid hydrolysis process. After mixing with 25 ml of water, the solution was filtered and saved for further methionine quantification through spectrophotometric analysis [17].

Assessment of Methionine

The presence of methionine was estimated based on the ensuing procedures [18]. 5 ml of the solution was placed in the test tube, followed by 1 ml of 14.3 N NaOH and 1 ml of the tenth solution of Glycine. After each addition, 0.3ml of the tenth mixture of Sodium Nitroprusside was added and mixed. Place the mixture tube in a 40°C water bath for 5-10 minutes. After two minutes of chilling in drinking water, shake in a particular amount of an HCl-H3PO4 mixture. Shake vigorously for another minute, then chill in room temperature water for 5-10 minutes. In comparison, consider a typical

Methionine solution that has been similarly handled. The absorbance of the solutions was measured at 520 nm.

Assessment of Phenylalanine

Phenylalanine content was assessed from the ensuing conventions of [19]. The response blend which is comprised of ninhydrin, citrate cradle, and glycerol is prepared. 3.8ml of the response blend is stepped through in examination tubes. Then, by adding water, get the volume up to 4ml by adding 10l of a sample. Blend every arrangement well and considered warming by utilizing a water bath for 45 minutes. Cool the arrangements at temperature. Match against a normal Phenylalanine arrangement comparatively dealt with, and the absorbance of the arrangements was estimated at 570 nm.

Assessment of Lysine

The subsequent methodology was used to estimate the lysine content [20]. Reagents were made for this convention; reagent A contained Methylcellosolve, Ferric chloride arrangement, and 0.1M KCl arrangement, which was offset by 1N HCL with a pH of 1.0. Reagent B incorporates disintegrated Ninhydrin arrangement with 0.1M KCl that has been changed in accordance with a pH of 1.0 with 1N HCL. The standard solution was then thoroughly mixed with 0.66ml of reagent A and 0.37ml of reagent B. After heating the reaction liquid at 100oC for 20 minutes, it was cooled immersed before adding 4ml of Dimethyl sulfoxide (DMSO) and thoroughly mixing to solubilize the coloured product. Following that, 6ml of deionized water was added and thoroughly mixed. At 470nm, the absorbance was measured.

Assessment of Leucine, isoleucine, tryptophan, threonine, valine

The five essential amino acids indicated above were estimated using the flowing technique [21]. The eight amino acids listed above (isoleucine,

leucine, tryptophan, valine, and threonine) were dissolved in 0.01 mol/l acid. Three newly prepared ninhydrin solutions, 0.3% vitamin C solutions, and an acetate-acetic acid buffer (pH 5.2). Aliquots of 100 ml amino acid solution, 2.0 ml acetate-acetic acid solution, 4.0 ml three ninhydrin solution, and 1.5 ml 0.3% vitamin C solution were added to each 25 ml volumetric flask and diluted to the mark with water, then mixed well, heated in an 85°C thermostatic water-bath for 40 minutes, and immediately cooled to temperature underwater. The absorbances of the final solutions were measured in the 1 cm cell against the reagent blank (as a reference solution) at (Valine 565nm, Tryptophan 600nm, Leucine 563nm, Isoleucine 564nm, and Threonine 570nm).

Assessment of histidine

The histidine content was calculated using the procedures [22]. Metol (5.8 mM) was produced by mixing 200 mg of the compound with 100 ml of water. Dissolve 200 mg of chloramine-T in 100 ml of water to generate a chloramine-T solution (7.1 mM). In comparison to the reagent blank, the absorbance was measured at 530 nm. The graph was used to calculate the amount of the chemical.

RESULTS AND DISCUSSION

The UV VIS Spectrophotometer was used to quantify all nine essential amino acids. Some of the 12 fruit samples tested positive for high levels of certain essential amino acid content, while others tested negative. Methionine has an incredibly extensive variety of impacts on the body. For instance, researchers have shown that methionine assumes a critical part in the development of veins, and similarly that a lack can prompt the turning gray of the hair related with regular maturing. Maybe most strangely, not withstanding, methionine appears to usefully affect assisting the body with managing poisons. Methionine content were found to be high in *Antidesma acidum* 1241.7±0.92 mg/100g dw, *Syzygium jambos* 1027.4±0.94 mg/100g dw, *Memecylon umbelatum* 1014.4±0.98 mg/100g dw followed by *Cordia dichortoma* 852.9±0.67 mg/100g dw, *Walsura trifoliata* 722.6±0.57 mg/100g dw and *Olox scandens* 627.4±0.48 mg/100g dw. In comparison with our fruits the methionine content were found high in papaya 2.9 g/16g N, guava 2 g/16g N, and durian 1.7 g/16g N [23]. From the *Tamarindus indica* the methionine content was found in 0.7 % [24]. Low amount of methionine content were found in *Strabulus asper* 625.4±0.52 mg/100g dw, *Lepisanthes rubiginosa* 607.8±0.52 mg/100g dw, *Flacourtia indica* 575.3±0.43 mg/100g dw,

Melastoma malabathricum 506.4±0.39 mg/100g dw, *Limonia acidissima* 457.4±0.32 mg/100g dw and *Grewia tilifolia* 426.7±0.32 mg/100g dw. Subsequently, any reasonable person would agree that leucine is a vital piece of the perplexing framework that changes the food we eat into ATP - the energy source utilized by the entirety of our cells. The highest amount of leucine content were observed in *Walsura trifoliata* 1219.4±1.09 mg/100g dw, *Olox scandens* 982.7±0.82 mg/100g dw *Strabulus asper* 829.7±0.72 mg/100g dw *Melastoma malabathricum* 776.8±0.64 mg/100g dw *Limonia acidissima* 706.2±0.63 mg/100g dw and *Syzygium jambos* 689.4±0.49 mg/100g dw. Some exotic fruits, which were found to be very high leucine content like papaya 5.9 g/16g N, jackfruit 5.7 g/16g N, durian 5.5 g/16g N and guava 4.9 g/16g N [23]. Imported fruits also noticed high leucine content such as parsimmons 6.4 g/16g N, apple 6.2 g/16g N and strawberry 5.1 g/16g N [23]. *Tamarindus indica* also contain 5.3 % of leucine [24]. From the evaluation lowest amount of leucine content were found in *Flacourtia indica* 576.2±0.44 mg/100g dw, *Memecylon umbelatum* 513.2±0.38 mg/100g dw, *Cordia dichortoma* 485.7±0.35 mg/100g dw, *Lepisanthes rubiginosa* 421.3±0.33 mg/100g dw and *Antidesma acidum* 341.7±0.23 mg/100g dw. Lowest amount of leucine content were noticed in some dried dates 114 mg/100 g fresh fruits, peach 29 mg/100 g fresh fruit, orange 22 mg/100 g fresh fruit and mango 32 mg/100 g fresh fruit [23]. Isoleucine is essential for the synthesis of red blood cells as well as the regulation of blood sugar levels in response to diet. The amount of isoleucine content were high in *Flacourtia indica* 1124.6±0.97 mg/100g dw *Syzygium jambos* 975.3±0.84 mg/100g dw 748.5±0.61 mg/100g dw *Antidesma acidum* 717.2±0.53 mg/100g dw *Memecylon umbelatum* 631.2±0.53 mg/100g dw and *Walsura trifoliata* 614.8±0.45 mg/100g dw. Good amount of isoleucine content were observed in jambu susu 3.5 g/16 g N, starfruit 3.3 g/16 g N and watermelon 3.2 g/16 g N [23]. Imported fruits like persimmons 4.5 g/16 g N and apple 3.5 g/16 g N also contain high amount of isoleucine [23]. Low amount of isoleucine content were observed in *Olox scandens* 579.3±0.47 mg/100g dw *Strabulus asper* 467.6±0.34 mg/100g dw *Melastoma malabathricum* 465.3±0.41 mg/100g dw *Lepisanthes rubiginosa* 427.5±0.32 mg/100g dw *Grewia tilifolia* 387.4±0.25 mg/100g dw *Cordia dichortoma* 358.7±0.22 mg/100g dw. Low isoleucine contents was observed in dried date 66 mg/100 g fresh fruit, peach 13 mg/100 g fresh fruit, orange 23 mg/100 g

fresh fruit, and mango 20 mg/100 g fresh fruit. Greater amount of tryptophan content were seen in *Antidesma acidum* 1589.7±1.34 mg/100g dw *Cordia dichortoma* 1247.5±1.07 mg/100g dw *Olox scandens* 1196.7±1.04 mg/100g dw *Melastoma malabathricum* 987.6±0.86 mg/100g dw *Grewia tilifolia* 957.4±0.84 mg/100g dw *Lepisanthes rubiginosa* 928.7±0.82 mg/100g dw *Flacourtia indica* 927.4±0.85 mg/100g dw *Memecylon umbelatum* 927.6±0.86 mg/100g dw and *Strabulus asper* 839.2±0.65 mg/100g dw. Smaller amount of tryptophan content were observed in *Limonia acidissima* 806.7±0.68 mg/100g dw *Walsura trifoliata* 658.4±0.47 mg/100g dw and *Syzygium jambos* 622.6±0.43 mg/100g dw. Threonine is known to assume an underlying part in the connective tissues of the body, however similarly as critically it is likewise a forerunner to two

molecules responsible for the transmission of nerve motivations around the body. Threonine can be changed over in the body into a substance known as "glycine", which blocks the transmission of nerve motivations, meaning it tends to be valuable for conditions related with muscle fits. Be that as it may, simultaneously it can likewise be transformed into a substance called "serine" which makes the contrary difference. Getting sufficient threonine therefore provides the body with the capacity to up-or down-manage these transmissions as required. Threonine is known to assume an underlying part in the connective tissues of the body, however similarly as critically it is likewise a forerunner to two molecules responsible for the transmission of nerve motivations around the body related with muscle fits.

Name of fruit sample	Quantitative evaluation of all essential amino acids (mg/100g DW)								
	Methionine	Leucine	Isoleucine	Tryptophan	Threonine	Valine	Phenylalanine	Lysine	Histidine
<i>Antidesma acidum</i>	1241.7±0.92	341.7±0.23	717.2±0.53	1589.7±1.34	569.3±0.38	627.4±0.47	358.4±0.39	246.74±0.19	356.8±0.21
<i>Cordia dichortoma</i>	852.9±0.67	485.7±0.35	358.7±0.22	1247.5±1.07	928.7±0.78	347.5±0.17	1024.3±0.96	573.4±0.36	448.3±0.34
<i>Flacourtia indica</i>	575.3±0.43	576.2±0.44	1124.6±0.97	927.4±0.85	675.8±0.52	907.5±0.84	458.2±0.38	428.6±0.34	875.6±0.71
<i>Grewia tilifolia</i>	426.7±0.32	382.4±0.28	387.4±0.25	957.4±0.84	268.3±0.14	178.6±0.13	529.4±0.44	378.6±0.23	345.7±0.23
<i>Lepisanthes rubiginosa</i>	607.8±0.52	421.3±0.33	427.5±0.32	928.7±0.82	346.7±0.24	356.7±0.29	357.8±0.27	356.7±0.17	571.4±0.47
<i>Limonia acidissima</i>	457.4±0.32	706.2±0.63	748.5±0.61	806.7±0.68	756.4±0.63	527.3±0.39	358.1±0.27	478.6±0.27	678.4±0.52
<i>Melastoma malabathricum</i>	506.4±0.39	776.8±0.64	465.3±0.41	987.6±0.86	632.5±0.53	469.3±0.34	497.6±0.35	1127.8±1.05	531.2±0.41
<i>Memecylon umbelatum</i>	1014.4±0.98	513.2±0.38	631.2±0.53	927.6±0.86	601.4±0.51	751.6±0.58	981.4±0.88	1121.4±1.02	398.5±0.28
<i>Olox scandens</i>	627.4±0.48	982.7±0.82	579.3±0.47	1196.7±1.04	510.7±0.36	310.8±0.23	569.4±0.41	740.6±0.56	593.7±0.47
<i>Syzygium jambos</i>	1027.4±0.94	689.4±0.49	975.3±0.84	622.6±0.43	721.4±0.52	744.3±0.54	529.7±0.43	807.5±0.59	894.7±0.78
<i>Strabulus asper</i>	625.4±0.52	829.7±0.72	467.6±0.34	839.2±0.65	931.7±0.87	510.4±0.41	710.4±0.58	673.6±0.57	493.8±0.37
<i>Walsura trifoliata</i>	722.6±0.57	1219.4±1.09	614.8±0.45	658.4±0.47	348.6±0.28	478.3±0.27	728.1±0.63	527.6±0.47	919.5±0.89
<i>Walsura trifoliata</i>	722.6±0.57	1219.4±1.09	614.8±0.45	658.4±0.47	348.6±0.28	478.3±0.27	728.1±0.63	527.6±0.47	919.5±0.89

Table: 2 Quantitative estimations of Essential amino acids through spectrophotometer

Threonine can be changed over in the body into a substance known as "glycine", which blocks the transmission of nerve motivations, meaning it tends to be valuable for conditions related with muscle fits. Be that as it may, simultaneously it can likewise be transformed into a substance called "serine" which makes the contrary difference. Highest quantity of threonine content were evaluated in *Strabulus asper* 931.7±0.87 mg/100g dw *Cordia dichortoma* 928.7±0.78 mg/100g dw *Limonia acidissima* 756.4±0.63 mg/100g dw *Syzygium jambos* 721.4±0.52 mg/100g dw *Flacourtia indica* 675.8±0.52 mg/100g dw *Melastoma malabathricum* 632.5±0.53 mg/100g dw *Memecylon umbelatum* 601.4±0.51 mg/100g dw *Antidesma acidum* 569.3±0.38 mg/100g dw. Lowest quantity of threonine content were evaluated in *Olox scandens* 510.7±0.36 mg/100g dw *Walsura trifoliata* 348.6±0.28 mg/100g dw *Lepisanthes rubiginosa* 346.7±0.24 mg/100g dw and *Grewia tilifolia* 268.3±0.14 mg/100g dw. Valine fills in as a significant component in hemoglobin particles and is likewise firmly

connected with the body's reaction to insulin. Valine content were found to be more in *Flacourtia indica* 907.5±0.84 mg/100g dw *Memecylon umbelatum* 751.6±0.58 mg/100g dw *Syzygium jambos* 744.3±0.54 mg/100g dw *Antidesma acidum* 627.4±0.47 mg/100g dw *Limonia acidissima* 527.3±0.39 mg/100g dw and *Strabulus asper* 510.4±0.41 mg/100g dw. Less valine content were observed in *Walsura trifoliata* 478.3±0.27 mg/100g dw *Melastoma malabathricum* 469.3±0.34 mg/100g dw *Lepisanthes rubiginosa* 356.7±0.29 mg/100g dw *Cordia dichortoma* 347.5±0.17 mg/100g dw *Olox scandens* 310.8±0.23 mg/100g dw and *Grewia tilifolia* 178.6±0.13 mg/100g dw. Phenylalanine is now and again alluded to as the "vibe great amino corrosive" since it is changed over into atoms that send messages around the body. These incorporate adrenaline, noradrenaline and dopamine, which is the synapse that enacts the delight focus of the cerebrum. For sure, some illegal drugs work, to some extent to a limited extent, by helping levels of dopamine, prompting sensations of generosity.

Curiously, an absence of these synapses is related with a scope of disagreeable ailments including ADHD, fretful leg syndrome, schizophrenia and Parkinson's infection. This truly assists with underlining exactly the amount of an effect phenylalanine and its subsidiaries can have in the body. Maximum amount of phenylalanine content were noticed in *Cordia dichortoma* 1024.3±0.96 mg/100g dw *Memecylon umbelatum* 981.4±0.88 mg/100g dw *Walsura trifoliata* 728.1±0.63 mg/100g dw *Strabulus asper* 710.4±0.58 mg/100g dw *Olox scandens* 569.4±0.41 mg/100g dw *Syzygium jambos* 529.7±0.43 mg/100g dw and *Grewia tilifolia* 529.4±0.44 mg/100g dw. High phenylalanine content were noticed in some Malaysian common fruits like hog plum 3.5 g/16g N, starfruit 3.2 g/16g N and water melon 2.2 g/16g N [23]. *Tamarindus indica* was seen in high phenylalanine content 5% [24]. Minimum amount of phenylalanine content were noticed in *Melastoma malabathricum* 497.6±0.35 mg/100g dw *Flacourtia indica* 458.2±0.38 mg/100g dw *Antidesma acidum* 358.4±0.39 mg/100g dw *Limonia acidissima* 358.1±0.27 mg/100g dw and *Lepisanthes rubiginosa* 357.8±0.27 mg/100g dw. From the analysis greater amount of lysine content were shown in *Melastoma malabathricum* 1127.8±1.05 mg/100g dw *Memecylon umbelatum* 1121.4±1.02 mg/100g dw *Syzygium jambos* 807.5 ±0.59 mg/100g dw *Olox scandens* 740.6±0.56 mg/100g dw *Strabulus asper* 673.6±0.57 mg/100g dw *Cordia dichortoma* 573.4±0.36 mg/100g dw *Walsura trifoliata* 527.6±0.47 mg/100g dw. Maximum amount of lysine content were noticed in some seasonal fruits like *Rukam masam* 14.7 g/16 g N, *jambu susu* 7.9 g/16 g N, *duku langsung* 5.9 g/16 g N and *cempedak* 5.3 g/16 g N [23]. Minor amount of lysine content were observed in *Limonia acidissima* 478.6±0.27 mg/100g dw *Flacourtia indica* 428.6±0.34 mg/100g dw *Lepisanthes rubiginosa* 356.7±0.17 mg/100g dw *Grewia tilifolia* 378.6±0.23 mg/100g dw *Antidesma acidum* 246.74±0.19 mg/100g dw. The lysine contents of tropical fruits like mango and watermelon of Igbesa Nigeria were 27.5 mg/100g and 63.8 mg/100g [25]. Good amount of histidine content were detected in *Walsura trifoliata* 919.5±0.89 mg/100g dw *Syzygium jambos* 894.7 ±0.78 mg/100g dw *Flacourtia indica* 875.6±0.71 mg/100g dw *Limonia acidissima* 678.4±0.52 mg/100g dw *Olox scandens* 593.7±0.47 mg/100g dw *Lepisanthes rubiginosa* 571.4±0.47 mg/100g dw and *Melastoma malabathricum* 531.2±0.41 mg/100g dw. Minimal quantity of histidine content were noticed in *Strabulus asper* 493.8±0.37 mg/100g dw *Cordia dichortoma* 448.3±0.34

mg/100g dw *Memecylon umbelatum* 398.5±0.28 mg/100g dw *Antidesma acidum* 356.8±0.21 mg/100g dw and *Grewia tilifolia* 345.7±0.23 mg/100g dw. Histidine, as the name implies, is a precursor to histamine. Anyone suffering from hay fever or other allergies may have been prescribed antihistamines, because histamine contributes to the inflammatory response. While this substance may be irritating for some people during pollen season, it is also an important aspect of the immune system, ensuring that white blood cells are capable of fighting illness. Histidine may also play a function in the healthy formation of red blood cells, according to evidence. In turn, these red blood cells transport nutrients throughout the body, ensuring that your cells have the resources they require to function properly. Proof likewise recommends that histidine assumes a part in the solid formation of red platelets. These red platelets, in turn, left supplements around the body, guaranteeing that your cells have the assets they need to proficiently work.

CONCLUSION

Recent research has been reported that the essential amino acids are present on various wild edible fruits. One can take enough fruits without any risk of obesity and increased lipid value in contrast to other fatty foods which increased weight, cholesterol and cardiac problems. The fibers of fruits increase movement of GI system for well digestion. They contain simple carbohydrates, which provides energy quickly and main source of energy for us comes from carbohydrates. Out of 12 wild edible fruits, *Antidesma acidum*, *Flacourtia indica*, *Walsura trifoliata*, *Cordia dichortoma*, *Melastoma malabathricum* and *Strabulus asper* were found to be good amount of essential amino acid contents viz. methionine, tryptophan, leucine, histidine, isoleucine, valine, threonine, phenyl lnine and lysine. Methionine and tryptophan content were found more in *Antidesma acidum*. A methionine supplement, for instance, has been utilized effectively to switch the adverse consequences of copper harming and issues related with an excess of paracetamol. Getting sufficient threonine therefore provides the body with the capacity to up-or down-manage these transmissions as required. Leucine and histidine content were greater amount observed in *Walsura trifoliata*. On the other hand *Flacourtia indica* also contain high value of isoleucine and valine content. *Cordia dichortoma*, *Melastoma malabathricum* and *Strabulus asper* found to be more values of phenylalanine, threonine and lysine content. In a genetic disorder phenylalanine is not metabolized in

human system and causes PKU (phenyl ketone urea) where phenyl pyruvic acid is excreted in urine. Hence these fruits of Odisha carry good balance of essential amino acids and they provide significant protein of in our diet.

Acknowledgment

The authors are grateful to the authority of the Regional Plant Resource Centre, Bhubaneswar for supporting this research work under a state plan grant obtained from the Forest, Environment and Climate Change Department, Govt. of Odisha.

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