

MAH/MUL/ 03051/2012

ISSN :2319 9318



April To June 2022
Spacial Issue

Date of Publication
01 June 2022

Editor

Dr. Babu g. Gholap

(M.A.Mar.& Pol.Sci.,B.Ed.Ph.D.NET.)

ख३०^a êx३०-०० '०xY० ०ê»०B, '०Y०Bx३०-०० -०BxY० ०ê»०B
-०BxY०x३०-०० ०xY० ०ê»०B, ०xY०x३०-०० x३०ç० ०ê»०ê
x३०ç०x३०-०० २०æ|ü ०"०»०ê, ‡Y० êú †-०£०० < ú० †x३०^a ê-०ê êú»०ê
- '०êüY' ०० •p००êY०B ,ü०x० †âú»०ê

❖ विद्यावार्ता या आंतरविद्याशाखीय बहुभाषिक त्रैमासिकात व्यक्त झालेल्या मतांशी मालक, प्रकाशक, मुद्रक, संपादक सहमत असतीलच असे नाही. न्यायक्षेत्र:बीड

Printed by: Harshwardhan Publication Pvt.Ltd. Published by Ghodke Archana Rajendra & Printed & published at Harshwardhan Publication Pvt.Ltd.,At.Post. Limbaganesh Dist,Beed -431122 (Maharashtra) and Editor Dr. Gholap Babu Ganpat.

Reg.No.U74120 MH2013 PTC 251205
Harshwardhan Publication Pvt.Ltd.
At.Post.Limbaganesh,Tq.Dist.Beed
Pin-431126 (Maharashtra) Cell:07588057695,09850203295
harshwardhanpubli@gmail.com, vidyawarta@gmail.com
All Types Educational & Reference Book Publisher & Distributors / www.vidyawarta.com

विद्यावार्ता: Interdisciplinary Multilingual Refereed Journal Impact Factor 8.14 (IIJIF)

ML
PRINCIPAL
Art, Science & Commerce
College, Chikhaldara

Date of Publication
June 2022

VidyawartaTM

International Multilingual Research Journal



Vidyawarta is peer reviewed research journal. The review committee & editorial board formed/appointed by Harshwardhan Publication scrutinizes the received research papers and articles. Then the recommended papers and articles are published. The editor or publisher doesn't claim that this is UGC CARE approved journal or recommended by any university. We publish this journal for creating awareness and aptitude regarding educational research and literary criticism.

The Views expressed in the published articles, Research Papers etc. are their writers own. This Journal dose not take any libility regarding appoval/disapproval by any university, institute, academic body and others. The agreement of the Editor, Editorial Board or Publicaton is not necessary. Editors and publishers have the right to convert all texts published in Vidyavarta (e.g. CD / DVD / Video / Audio / Edited book / Abstract Etc. and other formats).

If any judicial matter occurs, the jurisdiction is limited up to Beed (Maharashtra) court only.



<http://www.printingarea.blogspot.com>

विद्यवार्ता: Interdisciplinary Multilingual Refereed Journal Impact Factor 8.14 (IJIF)

ML
PRINCIPAL
Art, Science & Commerce
College, Chikhaldara

INDEX

01) Synthesis of 1-Aryl-3-(4-Methyl -6- Thiophen-2-yl-Pyrimidine-2yl)..... Prashant R. Mahalle, Sakharkherda	05
02) STUDIES ON FOOD, PREPARATION PRODUCTS, HEALTH, AND Dr. Nilima Y. Bhoge, Chikhladara Distt. Amravati	08
03) SYNTHESIS OF 1-[(4-BROMO-6-METHOXY-1,3-BENZOTHAZOL-2-YL)..... Bhagat. T. M., Umarkhed, Dist. Yavatmal (M.S.)	13
04) A Review on Pharmacological Activity and Phytochemical Properties..... Mr. Rahul P. Rahate, Dr. D. S. Hedao, Chikhaldara.	17
05) Assessment of Physico-chemical Properties of Farmland Soil From..... P. R. Bhokare, Dr. R. R. Wankhade, Digras Dist. Yavatmal	20
06) Synthesis and Biological Activity of Metal Complexes Derived.... Sandipkumar M. Devraye, Sonpeth Dist. Parbhani	24
07) Study of Druglikeness Properties of Oxadiazolyl Substituted Indazoles Shivshankar P. More, Suryakant B. Borul, Lonar, Dist-Buldana	29
08) POSITIVE AND NEGATIVE IMPACT OF NANOMATERIAL ON ENVIRONMENT SUNIL M.CHORE, KELAPUR	32
09) Thermokinetic studies of Co(II), Ni(II) and Cu(II) with..... S. R. Kelode, P. R. Jagnit, Ralegaon	35
10) Study of Solute-Solvent Interaction in a Different Medium at 303 K..... Usha S Wasnik, Chikhadara, Dist. Amravati (M.S.)	38
11) Physicochemical characterization of metal complexes with.... B. G. Kharode, L. P. Shinde, Nanded (M.S.India)	41
12) Survey on Total Dissolved Solids (TDS) of Groundwater of Tendoli Village.... Santosh M. Arade, Arni, Dist. -Yavatmal (MS), India.	43
13) An Ultrasonic Study of 3-(2-Methoxyphenoxy)-1, 2-Propanediol in.... Ravi Jumle, Usha Wasnik, Amravati	46

http://www.printingarea.blogspot.com
www.vidyawarta.com/03

13. A. K. Mukerjee & R. Ashare; Chem. Rev.; 91; 1-24; 1991.
14. H. Stephensen & F. Zaragosa; J. Org. Chem.; 62; 6096-6097; 1997.
15. G. M. Dyson; H. J. George; J. Chem. Soc.; 125; 1702-1708; 1924.
16. M.S.M. Pearson, A. Robin, J.C. Meslin, N. Bourgougnon and D. Deniaud; J. Org. Chem, 68, 8583 (2003).
17. R. Verma, S.Y. Kulkarni, C.I. Jose and V.S. Pansare; Carbohydr. Res., 133, 25 (1984).
18. T.K. Lindhorst and C. Kieburg; Synthesis, 1228, (1995).
19. F. Kavangh; "Analytical Microbiology," Academic Press, New York, (1963).
20. British Pharmacopoeia II; Biological Assay and Tests, The stationary office Ltd., London (U.K.), pp- A - 205-210 (1998).



02

STUDIES ON FOOD, PREPARATION PRODUCTS, HEALTH, AND ENVIRONMENTAL PERSPECTIVES IN MULBERRY (MORUS SPP.) – A REVIEW

Dr. Nilima Y. Bhoge

Associate Professor &

Head Department of Food Science

Arts Science and Commerce College,

Chikhaldara Distt. Amravati, Maharashtra

Abstract:

Mulberry is a fast-growing deciduous plant found in a wide variety of climatic, topographical, and soil conditions, and is widely distributed from temperate to subtropical regions. The mulberry belongs to the flowering plant genus *Morus* which is in the Moraceae family. The *Morus* genus has 24 species and at least one hundred known varieties belong to one subspecies. (1,2). Due to the presence of valuable phytochemical constituents, mulberry as a whole plant has been utilized as a functional food for a long time. Mulberry fruits are difficult to preserve as they have relatively high water content. Therefore for proper utilization, different value-added products like, jams, are made. Mulberries are excellent anti-microbial, anti-hyperglycaemic, anti-hyperlipidemic, anti-inflammatory, and anti-cancer properties and are used to combat different acute and chronic diseases. The current review provides a comprehensive discussion concerning the nutritional, phytochemical constituents, and functional properties of their preparation product of mulberry of Chikhaldara Dist Amravati Maharashtra.

MC

PRINCIPAL

विद्यार्ता: Interdisciplinary Multilingual Refereed Journal | Impact Factor 8.14 (IJIF)

College, Chikhaldara

Keywords: Mulberry, Nutritional compounds, Functional food, Value addition product, Multi-purpose

Content:

Introduction
Botanical description of mulberry
Dietary importance of mulberry
Preparation product

Introduction

Chikhaldara is a hill station and a municipal council in Amravati district in the Indian state of Maharashtra. The sole hill resort in the Vidarbha region is situated at an altitude of 1118 meters. Chikhaldara has an annual rainfall of 1200mm-1650 mm. rain water collected instrument & whether counting instrument observation in the environmental department in our college. Temperatures vary from 32°C to 39°C in summer to 7°C-18°C in winter. June, July, August, and September are the four months of Monsoon. Chikhaldara experiences heavy rainfall during these months. [11 Mangale] The average temperature during monsoon is twenty-five degrees celsius and during winter it goes below 15°C. Summer is not pleasant in this place because the temperature is very high. the temperature here lies between 32°C to 40°C. [2]

It is grown in a variety of soil conditions ranging from loamy to clayey, deep fertile to flat soil having a good drainage system and good water holding capacity. For good plant growth, it requires a pH ranging from 6.5-6.8. as per the environmental department in our college. The present study on mulberry was collected from the gram Alodoha Chikhaldara. Mulberries are sweet in Chikhaldara and regain Indian berries that are available during a short period twice a year - from March to May and then again from October to November. They hang from a genus of deciduous trees that grow in a variety of temperate areas around the world.

General information :

The mulberry tree is known as *Morus alba* in the botanical name. Mulberry has wide medicinal use such as making blood tonics, cure dizziness, constipation, urinary incontinence, etc. It is also used

for making fruit juice [Ustun-Argon Z.,.]

Mulberry belongs to the *Morus* genus of the Moraceae family and is dispersed extensively in diverse climatic and environmental circumstances ranging from tropical to temperate. Moraceae, also known as the mulberry. The term *Morus* is derived from the Latin word 'mora', which means delay, most likely because of the slow development of its buds. *Morus nigra* (black mulberry) and *Morus rubra* (red mulberry) are all commonly accepted worldwide species of the genus. Mulberry fruits are soft and delicate, and the harvesting season lasts for a month usually from May-June in most parts of the world and the best growing temperature is between 24 and 28 °C (Sharma and Zote, 2010, Dhiman et al., 2020). *Morus* as they exhibit maximum nutritional medicinal properties. In India, mulberry is known as "Kalpa Vruksha" since all parts of the plant are used for various purposes and its fruit is commonly named mulberry. fruits of mulberry, particularly black and red varieties are advantageous to the human body [Ercisli and Orhan, 2007). Its fruits, leaves, as an anti-fever, assist in the discharge of urine, lower blood pressure, dysentery, as a de-worming agent, laxative, treat diabetes, hypertension, arthritis, and anemia (Özgen et al., 2009). The presence of valuable constituents in mulberry leaves and fruits makes the plant suitable to be placed in the category of functional foods that are useful to human health in addition to its basic nutritional function (Kadam, 2019). To properly utilize the mulberry or enhance its storage life, maintain nutritional and organoleptic qualities, and minimize the waste, the possibility of introducing mulberry as a functional food. Almost all varieties of the mulberry plant are traditionally recognized in, Ayurveda, because of with several pharmacological properties. Fruits of *M. nigra* are the important constituents that have anti-cancerous activities (Nursalam, 2016).

2. Botanical description of *Morus* Mulberry:

Kingdom: Plantae
Subkingdom: Trachebionua
Superdivision: Mafnoliophyta
Class: Magnoliophyta

Subclass: Hamamelididae
Order: Urticales
Family: Moraceae
Genus: Morus L.

Fig 1: Scientific Classification of mulberry

It is typically a deciduous or medium-sized woody perennial tree having upright fissured bark and cylindrical stem with a milky sap growing up to 10–13 m tall (Rahman and Khanom, 2013). Mulberry fruit is precisely a cluster of small fruits that are organized longitudinally around the central axis similar to that in blackberry up to 5 cm long, white to pinkish-white, purple, or black when ripe (Anonymous, 2001).

Mulberry (*Morus alba* L.) fruit has a high yield in one fruiting season in many countries, especially in Asia, and has a long history of use as an edible fruit and traditional medicine. A great diversity of nutritive compounds such as fatty acids, amino acids, vitamins, minerals, and bioactive compounds, including anthocyanins, rutin, quercetin, chlorogenic acid, and polysaccharides have been found in mulberry fruit depending on the cultivars and maturity stages. Furthermore, the extracts and active components of mulberry fruit have demonstrated numerous biological activities, including antioxidant, neuroprotective, antiatherosclerosis, antitumor, antihyperglycemic, and hypolipidemic activities. [Qingxia Yuan]

3. Dietary importance of Morus

Fully ripened mulberry fruit has a wonderful mouth-watering taste with a good aroma and flavor. It is appreciated for direct consumption and for making value-added products. Mulberry fruits are recognized for the well-being of human beings due to their high nutritional significance (Sengül et al., 2005). Mulberry is rich in alkaloids, polyphenols, flavonoids, and anthocyanins, which have been suggested to be responsible for health benefits. [Wei Song]

M. alba fruit is a good resource of carbohydrate, lipid, protein, vitamins, minerals, and fibers. The quantity of protein in fresh *M. alba* fruit is greater than that of raspberries (Rao and Snyder, 2010) and strawberries (Giampieri et al., 2012) and

comparable to blackberries, (Kaume et al., 2012) whereas the anthocyanin content is higher than blackberry, blueberry, blackcurrant, and redcurrant (Veberic et al., 2015).

M. alba fruit contains both essential and non-essential amino acids. The essential amino acid /total amino acid ratio is 42 percent, which is almost equal to certain protein-rich foods such as fish and milk (6Jiang and Nie, 2015). Each variety of *Morus* species contains a significant amount of vitamin C, however among all varieties *M. nigra* contains the maximum quantity. The ascorbic acid content in *M. alba* and *M. nigra* is 15.81 and 12.81 mg/100g, respectively of fresh fruit weight (Eyduvan et al., 2015).

Among different fruits, mulberry is the most highlighted natural gift in its superior nutritional and bioactive composition, indispensable for continuing a healthy life. It also acts as a hepatoprotective immune stimulator and improves vision, anti-microbial, anti-cancer agent, anti-stress activity, atherosclerosis, neuroprotective functions, and anti-obesity action. The mulberry fruits also help reduce neurological disorders and mental illness. The main reason for that is the therapeutic potential present in the nutritional components of the mulberry fruit.

Materials and Methods

Materials: Wild Mulberries (*Morus* species) were harvested from a local tree in a hilly area Chikhaldara ripening stage. one kilogram of mulberries was harvested and the stem on the fruit was cut to obtain uniform samples. Three different materials, namely, regular paper bags, to pack 100 gm of mulberry in each pack the fresh mulberries. TSS 7.75 °Brix. Check by hand refractometer The packed fruits were stored at 3 °C for 3 to 5 days to observe the change in mass loss, surface color, TSS, and visual quality. [Ruili Wang]

Preparation product:

Preparation of jam: The demand for health beneficial products is increasing day by day with increased awareness about health. These days' consumers want high-quality foods that have a natural freshness and are free from additives, without compromising shelf life. There is considerable

demand for fresh fruits and their products. Most fruits are seasonal and their shelf life is very limited, heat treatment processing can be used to maintain and preserve the quality of these fruits in various products such as pulp, jam, jellies, and juices throughout the year, which can be enjoyed. Jam is a type of fruit preservative /spread usually made from all types of fruits, sugar, and pectin for consumption during the off season to enhance the taste and nutritional value of the main course. Jams are famous mainly due to their availability, sensory quality, and low cost they are usually canned or sealed after production in sterilized bottles [Muresan C.,].

The study was executed in the laboratory of the Department of Food Science of Arts Science commerce college Chikhladara. The raw materials for the preparation of jam i.e mulberry fruit, powder, pectin powder, and citric acid were purchased from the local Amravati Distt, Amravati

Mulberry fruits were collected in Chikhladra area. Collected fruits. Mulberry fruits were prepared for making jam. The jam was prepared in a stainless-steel container, where the ingredients (mulberry fruit, pectin powder, and citric acid) percentage was 96% fruits 2.5 % pectin, and 1.5 % citric acid for making Jam pulp was with other ingredients heated and mixed until desired consistency was obtained. Observing plate test like tongue shape consistency will be obtained. After cooling, the jam was filled in glass jars

Sr. No.	Ingredients	Amount (gm)
1	Mulberry fruit pulp	75
2	Sucrose	20
3	Pectin	2.5
4	Citric Acid	1.5

Table: 1 Formulation of mulberry fruit jam.

Flow chart for mulberry fruit jam

Fresh ripe fruits (, mulberry fruit) Washing
Boiling of fruit Extraction of juice Adding juice and stirring well-Adding pectin powder and citric acid
Rapid boiling and stirring cooked fruit, pectin powder, and citric acid Jam product Filling and

packaging into container Cooling for storage in a dry place

RESULTS AND DISCUSSION

Sensory evaluation :

Table 2 presents the sensory scores of different levels of addition in fruit jam. The product was found to be highly acceptable with scores for color & appearance, test flavor and texture by scorecard proving for sensory evaluation attributes 7.9 ± 0.66 , texture 7.9 ± 0.58 , flavor, taste 8.1 ± 0.65 and overall acceptability. the product was found to be highly acceptable with scores for color & appearance 7.9 ± 0.66 , texture 7.9 ± 0.58 , flavor & taste 8.1 ± 0.65 , and overall acceptability by seven panels of judges. The scored card will be separately provided for evaluation of the prepared jam. With hedonic scale applying to evaluate attributes

Sr. No	Attributes	Average judge result
1	Colour	7.9
2	Appearance	7.7
3	Texture	7.9
4	Flavor	7.8
5	Taste	8.1
6	Overall acceptability	8.0

Fig 2: Sensory evaluation with six attributes result

Conclusion

The present study of mulberry fruits is highly nutritious & healthy beneficial fruits and prepared new product from this fruits prepared from juice Jam, also processing product prepared In the present study, the keeping quality of fresh mulberry is up to for 3 to 5 days. three days in the refrigerator was stored at normal refrigerator temperature It is no longer shelf life of up to three days in the refrigerator at 30C. Thus, this fruit jam can be preferred as a healthy natural food product for all vulnerable age groups, obese, and cardiovascular disease patients.

ACKNOWLEDGEMENT :

I Experiment department of Food Science and Commerce College, Chikhladara for supporting and providing Lab and other facilities for the research activity Faculty of environment

Science to provide rainfall, weather data, and soil data. Also, thanks to Dr. V.S. Mangale for providing this information about my research

Suggestion:

different candy jelly, squash, and sharbat, formed from mulberry fruits will be prepared

Reference:

1. Alakbarli Farid, Aliyev Iskandar. 8.3 Silk Road - The Origin of the Mulberry Trees - Farid Alakbarli and Iskandar Aliyev [WWW Document] AZERBAIJAN Int. 2000 [Google Scholar]
2. Anonymous, 2001. The Wealth of India, a dictionary of raw materials and industrial products. Raw Materials, CSIR, PID, New Delhi. 6 (LM), 429–437.
3. Eyduran, S.P., Ercisli, S., Akin, M., Beyhan, O., Gecer, M.K., Eyduran, E., Erturk, Y.E., 2015. Organic acids, sugars, vitamin C, antioxidant capacity, and phenolic compounds in fruits of white (*Morus alba* L.) and black (*Morus nigra* L.) mulberry genotypes. *J. Appl. Bot. Food Qual.* <https://doi.org/10.5073/JABFQ.2015.088.019>.
4. Ercisli S, Orhan E. Chemical composition of white (*Morus alba*), red (*Morus rubra*), and black (*Morus nigra*) mulberry fruits. *Food Chemistry.* 2007;103(4):1380–4.
5. Giampieri, F., Tulipani, S., Alvarez-Suarez, J.M., Quiles, J.L., Mezzetti, B., Battino, M., 2012. The strawberry: composition, nutritional quality, and impact on human health. *Nutrition.* <https://doi.org/10.1016/j.nut.2011.08.009>.
6. Jiao, Y., Wang, X., Jiang, X., Kong, F., Wang, S., Yan, C., 2017. Antidiabetic effects of *Morus alba* fruit polysaccharides on a high-fat diet- and streptozotocin-induced type 2 diabetes in rats. *J. Ethnopharmacol.* <https://doi.org/10.1016/j.jep.2017.02.003>.
7. Kadam, R.A., 2019. The mulberry, *Morus alba* (L.): the medicinal herbal source for human health. *Int. J. Curr. Microbiol. App.* Sci 8, 2941–2964.
8. Kaume, L., Howard, L.R., Devareddy, L., 2012. The blackberry fruit: a review on its composition and chemistry, metabolism and bioavailability, and health benefits. *J. Agric. Food Chem.* <https://doi.org/10.1021/jf203318p>.
9. Magale Vijay S 2010, Genesis and composition of humus in melghate tiger reserve and its impact on biodiversity Thesis, Arts Science and Commerce College Chikhaldara,
10. Muresan C., Pop A., Muste S., Scrub S., & Rat A. —Study concerning the quality of jam products based on banana and ginger. *Journal of Agroalimentary Processes and Technologies*, 20(4), 408–411, 2014
11. Nursalam, 2016, metodepenelitian, Fallis, A., 2013. n!qNo Title No Title. *J. Chem.Inf. Model.* 53, 1689–1699.
12. Qingxia Yuan, Longyan Zhao The Mulberry (*Morus alba* L.) Fruit—A Review of Characteristic Components and Health Benefits *J Agric Food Chem.* 2017 Dec 6;65(48):10383-10394. DOI: 10.1021/acs.java.7b03614. Epub 2017 Nov 20
13. Rahman, A.H.M.M., Khanom, A., 2013. Taxonomic and ethnomedicinal study of species from Moraceae (Mulberry) Family in Bangladesh Flora. *Res. Plant Sci.* <https://doi.org/10.12691/plant-1-3-1>.
14. Rao, A.V., Snyder, D.M., 2010. Raspberries and human health: a review. *J. Agric. Food Chem.* <https://doi.org/10.1021/jf903484g>.
15. Ruili Wanga, Satyanarayan R.S. Devb, Vijaya G.S. Raghavanc, Yvan Gariépyc, 2013 Improving mulberry shelf-life using PEAKfresh package in cold environment *JOURNAL OF FOOD RESEARCH AND TECHNOLOGY*, 2013 | Vol 1 | (2) 73-79 Journal homepage: www.jakraya.com/journal/jftr

16. Sharma, S.K., Zote, K.K., 2010. Mulberry - a multi-purpose tree species for the varied climate. Range Manag. Agrofor.
17. Sengül, Memnune, FatihErtugay, M., Sengül, Mustafa, 2005. Rheological, physical, and chemical characteristics of mulberry pekmez. Food Control. <https://doi.org/10.1016/j.foodcont.2003.11.010>.
18. Veberic, R., Slatnar, A., Bizjak, J., Stampar, F., Mikulic-Petkovsek, M., 2015. Anthocyanin composition of different wild and cultivated berry species. LWT- Food Sci. Technol. <https://doi.org/10.1016/j.lwt.2014.08.033>
19. Ustun-Argon Z, elhan N, Gøkyer A, Bóyókhelvacúgil-Φztórk S, Koparal B. Phytochemical Evaluation of Morus alba Seeds and Cold Pressed Oil. JOTCSA. 2019;6(1):41–50. DOI: <https://dx.doi.org/10.18596/jotcsa.470279>.



03

SYNTHESIS OF 1-[(4-BROMO-6-METHOXY-1,3-BENZOTHAZOL-2-YL)AMINO]-3-CHLORO-4-SUBSTITUTED ARYL AZETIDIN-2-ONE AND EFFECT ON SEED GERMINATION

Bhagat.T.M.

P. G. Department of Chemistry, G.S. Gawande College, Umardhed, Dist-Yavatmal (M.S.)

Abstract :

4-bromo-2-hydrazino-6-Methoxy benzothiazole 2 has been prepared by refluxing 2-amino-4-bromo-6-methyl benzothiazole 1 in ethanol with hydrazine hydrate. Compound 2 condensed independently with 2-hydroxy-3-methoxy-benzaldehyde/4-methoxy benzaldehyde/4-hydroxy-3-methoxy benzaldehyde/ 2-hydroxybenzaldehyde /4-hydroxy benzaldehyde /4-dimethyl aminoben- z aldehyde to obtain corresponding hydrazones (4a-4f). These hydrazones (4a-4f) is treated with chloroacetyl chloride in presence of triethyl amine and dioxane independently to obtained corresponding azetidin-2-ones (5a-5f). The structure of the compounds has been confirmed by elemental and spectral analysis. All the newly synthesised compounds were evaluated for their antibacterial activity.

Key Words : benzothiazole, Azetidinone, biological screening

Introduction:

2-Azetidinones, commonly known as β -lactams, are well-known heterocyclic compounds among the organic and medicinal chemists. the activity of the famous antibiotics such as penicillins,