iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 11 **Issue:** I **Month of publication:** January 2023

DOI: https://doi.org/10.22214/ijraset.2023.48696

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue I Jan 2023- Available at www.ijraset.com

Review: Antioxidant Activity of Rose Hip

Ishika Waghmare[1], Ashwini Bharati[2]
Department of Pharmaceutics

Abstract: ***Antioxidants are bioactive and plant-derived compounds that are mostly comprised of herbal formulation. Most bioactive substances such as flavonoid, phenolic compounds, and ascorbic acids show antioxidant activity. According to various research articles, rosehip is one of the plants considered to be providing antioxidant property. Along with antioxidant properties, it also exhibits antimicrobial, antibacterial, and antiobesity properties. Recent studies shows many formulation and techniques which are obtain to provide antioxidant property such as 3D printing technique. FRAP, ABTS, DPPH radical scavenging technique are used for determination of antioxidant property.***

FRAP is used to estimate reductive potential of antioxidant which describe the reduction of Fe by antioxidant compound. The total antioxidant capacity is used to approach data of antioxidant property of biological samples and acknowledge for determination of antioxidant capacity against free radicals.

This study determines the antioxidant capacity of rosehip which shows the high potential and medicinal approach in treating diseases and skin related problems such as anti aging.

Keywords: Scavenging radicals, Antioxidant, Flavonoid, DPPH, FRAP.

I. INTRODUCTION

Antioxidants are the compounds that inhibit oxidation, a chemical reaction that can produce free radicals and chain reaction that may damage the cells of organisms [1]. Nowadays, antioxidant is refer as bioactive compound due the presence of plant-derived compound which are extracted from vegetables and fruits [2].Many food products undergoes oxidation reaction when exposed to air or heat or light in case of this condition antioxidant compounds are added to food products [3]. In todays Scientific and Technological studies, the antioxidant activity can be seen or studied by in vivo or in vitro terms on plants or animals and also studied on enzymes. [4]

With use of antioxidant in pharmacology, cosmetics, and herbal medicines and in foods like jam, jelly have enhance its importance scientifically [4].

Antioxidant are also used in as protection in edible film, coating for production and also as prevention of food products due to which it enhances products shelf life [4]. Antioxidant are of two type Natural antioxidant and Synthetic oxidants. The natural oxidant are obtained in pure form from plants, vegetables, fruits, spices etc and every plant source has various activities depending on collection, cultivation, diversity, extraction and processing methods and environmental conditions. Natural antioxidants like flavonoids, phenolic compounds, carotenoids etc. [4]

Synthetic antioxidants are added to foods to preserves lipid components from quality deterioration. Commonly used synthetic antioxidants are butylated hydroxyl anisole (BHA),butylated hydroxyl toluene (BHT) , propyl gallate (PG) and tert-butyl hydroquinone (TBHQ). [5]

Rosehip is one of herbal plant used as antioxidant, anti inflammatory, anti aging etc. The Rose is a flowering plant belongs from Genus Rosa of family Rosaceae contain over three hundred of species are grown or cultivated [6].Rosa plants have been seen having variety of species which mainly depends on climatic conditions, access to sunlight, adequate amount of water and the quality of soil [7].

Rosehip are also refer as pseudo-fruits which contains high amount of Ascorbic Acids and other bioactive compounds such as Carotenoids, Phenolic compounds, Flavonoid, Carbohydrate, Fatty acids [8,9].Rosehip is achenes fruit termed as botanical fruit of rosehip and it contains red fleshy pulp or shell and whole aggregate fruit is called pseudo fruit [13].

Natural antioxidant present in the rosehip maintains the human body redox level and prevent from acquiring chronic disease [8].As from previous research studies, Rosehip contain high amount of phenolic compounds due to which it shows antioxidant activity which reduced oxidative stress caused by free radicals. Due to presence of high amount of Vitamin C used to make tea and herbal medicine. [8]

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 11 Issue I Jan 2023- Available at www.ijraset.com

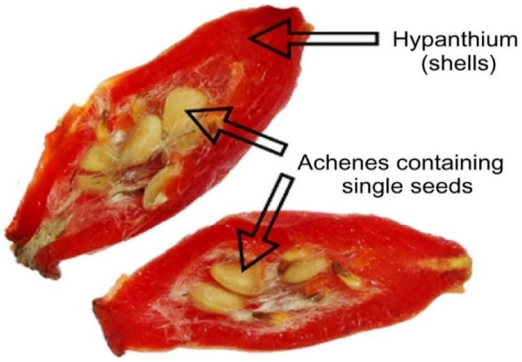


Figure 1 : simplified botanical anatomy of rosehip

The rosehip also shows antibacterial and antimicrobial activity which are determined by various technique such as Minimum Inhibitory Concentration and Dilution methods [10]. Recently antiobesity activity of Rosehips determined by performing clinical trials comparing with placebo drug which result that rosehip is good in preventing obesity [11].In recent research study, Rosehip is used as functional compound to enhance the Quality of food by 3D printing technique which is emerging and valuable technique used to personalize food and valorized food byproduct.[12]

II. MATERIAL AND METHOD

A. Material

The Antioxidant property of rosehip was determined by various method .Materials used were ethanol, Distilled water, HPLC instrument for ethanol extraction. For total phenolic content, folin-ciacalteu reagent, sodium carbonate were used.5% NANO2 , 5%ALCL3 and 1M NaOH used for estimation of total flavonoid compound.ABTS + solution, DPPH free radical scavenging and TPTZ was used for estimating Antioxidant capacity.

B. Preparation of Ethanol Extract

Dried Rosa L. fruit powder was weight about 2.00 g with addition of 50.00 ml of 70 .00% (v/v) Ethanol which is extracted in an ultrasonic bath about 20 min at 80 KHz frequency and 1130 W. The extraction was filtered and dried, obtained mass or residue was washed with 70.00% (v/v) Ethanol and transferred into measuring flask of 50 ml, adding 70.00 % (v/v) Ethanol up to marked. By HPLC Analysis, the extracts was filtered through Carl Roth membrane filters. [8]

C. Total Phenolic Content

Total phenolic content was estimated by Folin-Ciocalteu method adopted from Singleton-Rossi .To 25 ml of 1:10 diluted folin-ciocalteu phenol reagent, add 0.05ml of diluted extract and 0.45ml of distilled water, with addition of 2 ml of 75% (w/v) Sodium carbonate and stored for 5 min at 50 °C. After storing, their absorbance was determined at 760 nm by spectrophotometric and standard curve of gallic acid was estimated. [14]

D. Total Flavonoid Compound

Diluted solution of extract and 0.3ml of 5% NaNo2 was mixed together and left to stand for 5 min by addition of 0.5ml of 5% ALCL3 and kept standing for 6 min .Add 0.5 ml of 1 M NaOH is added to the mixture. Absorbance was determined after 10 min at 510 nm. It was expressed in terms as mg epicatechin equivalent per g (mg ECE /g). [16].

III. DETERMINATION OF ANTIOXIDANT CAPACITY

A. FRAP (Ferric Reducing Antioxidant Power)

By Spectrophotometric method, the ferric reducing antioxidant power was determined which was acquired from Benzie and strain to analyzed antioxidant capacity of rosehip (15). Sample containing rosehip extract was mixed with TPTZ (aqueous solution of iron-2,4,6-tripirydyl-5-triazine complex) and incubate at 37°C for 10 min and absorbance was measured by spectrophotometric at 595nm against blank sample (distilled water and reagent).[15]

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

B. ABTS

The antioxidant capacity was determined by using ABTS+ radical free scavenging activity (2,2`- azino – bis (3-ethylbenzothiazoline-6-sulfonic acid) proposed by Brand Williams et al. The10.00 ml of ethanol extract of Rosa L and ABTS + solution water was mixed and kept for 30 min in the dark. Absorbance was determined at 734nm wavelength. [8]

C. DPPH free Radical Scavenging

DPPH was used for the determination of free radical scavenging which was proposed by Blois and Demarchelier. With the ethanol DPPH (2,2-diphenyl-1-picrylhydrazyl) was diluted to 3ml. before mixing thoroughly in the vortex mixture, prepared 1ml of DPPH was added to the sample and left in the dark for 30 minutes incubation at 30° C. [17] [18]

IV. CONCLUSION

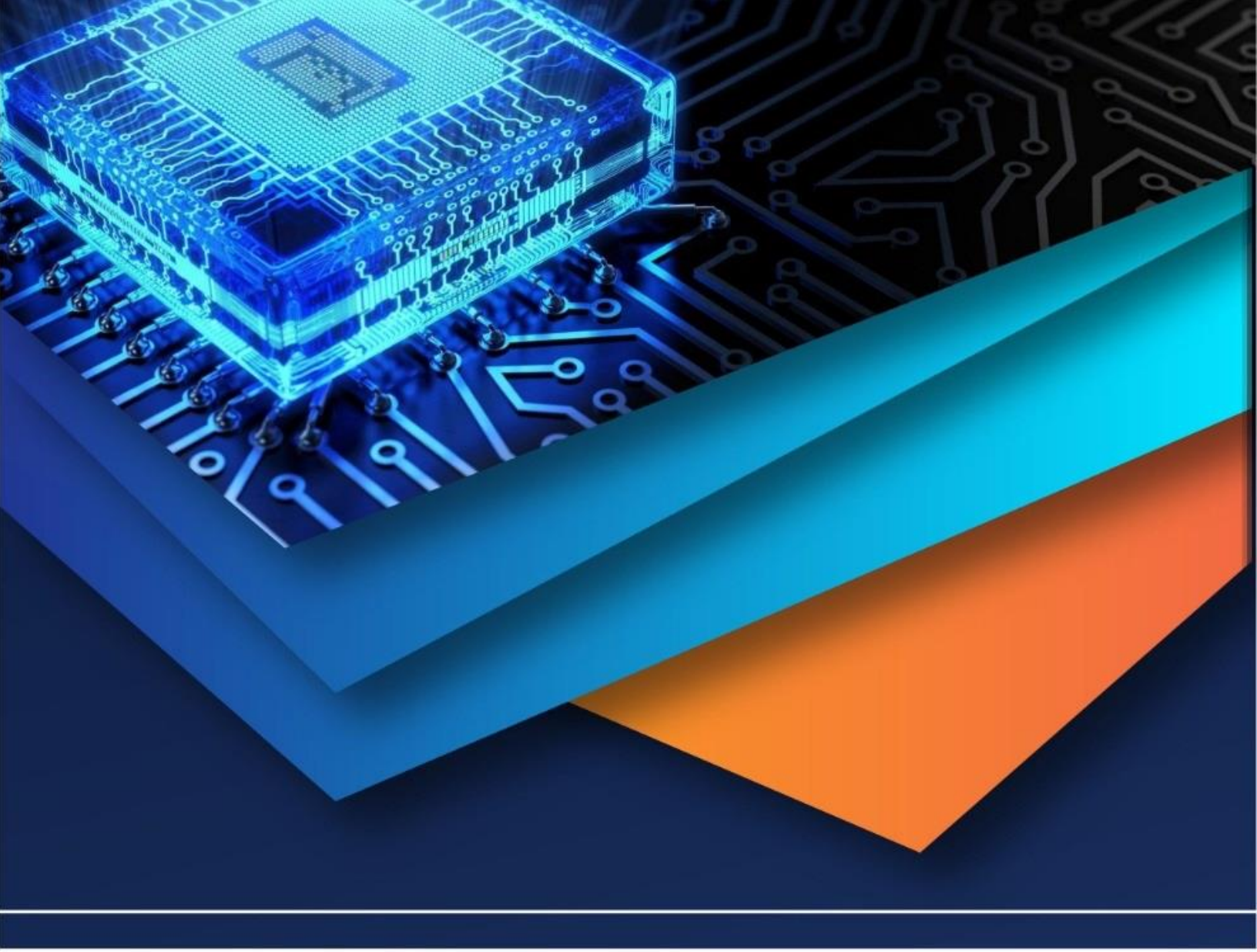
In the present study antioxidant of the natural origin obtained from Rosacaea (Rosa) and also proven different potential and medicinal use and high content of vitamin C, E, D and polyphenols and which have antioxidant effect.

Rose hips content the high potentials for treatment of skin aging, skin disorder and also useful for treatment of anti-inflammatory effect. In the small portion generally it found to be used.

REFERENCES

[1] Antioxidant Google (online).Available : https://g.co/kgs/5nLXqv
[2] Peng, Y., Bishop, K.S. and Quek, S.Y., 2019. Extraction optimization, antioxidant capacity and phenolic profiling of extracts from flesh, peel and whole fruit of New Zealand grown feijoa cultivars. Antioxidants, 8(5), p.141.
[3] Lourenço, S.C., Moldão-Martins, M. and Alves, V.D., 2019. Antioxidants of natural plant origins: From sources to food industry applications. Molecules, 24(22), p.4132.
[4] Zehiroglu, C. and Ozturk Sarikaya, S.B., 2019. The importance of antioxidants and place in today's scientific and technological studies. Journal of food science and technology, 56(11), pp.4757- 4774.
[5] Lourenço, S.C., 2019. Moldão-Martins, M. Alves, VD Antioxidants of natural plant origins: From sources to food industry applications. Molecules, (24), p.4132.
[6] Rose Wikipedia (online).Available : https://en.wikipedia.org/wiki/Rose
[7] DANIELLE SMYTH 2022 homepage on Hunker (online). Available: https://www.hunker.com/13427262/rose-plant-habitats
[8] Butkevičiūtė, A., Urbštaitė, R., Liaudanskas, M., Obelevičius, K. and Janulis, V., 2022. Phenolic Content and Antioxidant Activity in Fruit of the Genus Rosa L. Antioxidants, 11(5), p.912.
[9] Ilyasoğlu, H., 2014. Characterization of rosehip (Rosa canina L.) seed and seed oil. International Journal of Food Properties, 17(7), pp.1591-1598 .
[10] Cojocari, D., 2022. In Vitro Antibacterial Effect of Various Berries on Listeria monocytogenes as Food Borne Patogen. Agrobiodiversity for Improving Nutrition, Health and Life Quality, 6(1).
[11] Kozai, Y. and Matsuura, Y., 2015. Daily intake of rosehip extract decreases abdominal visceral fat in preobese subjects: a randomized, double-blind, placebo-controlled clinical trial.
[12] Matas, A., Igual, M., García-Segovia, P. and Martínez-Monzó, J., 2022. Application of 3D Printing in the Design of Functional Gluten-Free Dough. Foods, 11(11), p.1555.
[13] Winther, K., Hansen, A.S.V. and Campbell-Tofte, J., 2016. Bioactive ingredients of rose hips (Rosa canina L) with special reference to antioxidative and anti-inflammatory properties: in vitro studies. Botanics: Targets and Therapy, 6, pp.11-23.
[14] Koczka, N., Stefanovits-Bányai, É. and Ombódi, A., 2018. Total polyphenol content and antioxidant capacity of rosehips of some Rosa species. Medicines, 5(3), p.84.
[15] Tabaszewska, M. and Najgebauer-Lejko, D., 2020. The content of selected phytochemicals and in vitro antioxidant properties of rose hip (Rosa canina L.) tinctures. NFS Journal, 21, pp.50-56.
[16] Özdemir, N., Pashazadeh, H., Zannou, O. and Koca, I., 2022. Phytochemical content, and antioxidant activity, and volatile compounds associated with the aromatic property, of the vinegar produced from rosehip fruit (Rosa canina L.). Lwt, 154, p.112716.
[17] DEMİR, B. and GÜRSES, M., 2022. Determination of Antioxidant Activities of Rosehip Marmalade Added Kefir During Its Storage Process. Journal of the Institute of Science and Technology, 12(2), pp.761-768.
[18] Rahman, M., Islam, M., Biswas, M. and Khurshid Alam, A.H.M., 2015. In vitro antioxidant and free radical scavenging activity of different parts of Tabebuia pallida growing in Bangladesh. BMC research notes, 8(1), pp.1-9.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)