PRELIMINARY PHYTOCHEMICAL ANALYSIS AND TOTAL PHENOL CONTENT OF WALNUT OIL

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A R T I C L E  I N F O

Article History:
Received 11th January, 2017
Received in revised form 19th February, 2017
Accepted 22nd March, 2017
Published online 28th April, 2017

Key words:
Phenol Content, Walnut Oil

A B S T R A C T

Aim: To estimate the total phenol and phytochemical content of walnut oil
Objective: To determine total phenols and phytochemicals present in walnut oil
Background: A walnut is a species belongs to the nut Family Juglandaceae. The walnut is nutrient-dense with protein and essential fatty acids. Walnut oil is rich in polyunsaturated fatty acid like alpha linolenic acid and linoleic acid. Phytochemicals are chemical compounds naturally present in plants. They found in fruits, nuts, vegetables, legumes and grains and responsible for the taste, smell and color of the plant based foods. Most of them have antioxidants activity and protect our cells against oxidative damage and reduce the risk of developing certain types of cancer
Reasons: Frequent nut intake is associated with protective effects against cardiovascular diseases. In addition to the generally high contents of unsaturated fatty acids, polyphenol compounds seem to be also implicated in health promoting effects of nuts due to their antioxidant properties.

INTRODUCTION

The scientific name of walnut is Juglans regia. It's a rich source of proteins and essential fatty acids. In this topic we will find the phytochemicals present and the total phenol content of walnut oil. The presence of Phytochemicals in plants help in curing diseases and help in healing (1). They are present in the leaves, vegetables, fruits and seeds of the plant. Chlorophyll, proteins and common sugars are included in primary constituents and secondary compounds have terpenoid, alkaloids and phenolic compounds [2]. Terpenoids exhibit various important pharmacological activities i.e., anti-in ammatory, anti- cancer, anti-malarial, inhibition of cholesterol synthesis, anti-viral and anti-bacterial activities [3]. And due to the presence of PUFA in them they help in protecting the body from cardiovascular problems.

MATERIALS AND METHODS

Plant materials

Walnut oil is taken as plant material

Chemicals

Fehling solution A and Fehling solution B, ethanol, distill water, aqueous HCl, methanol, chloroform, concentrated sulphuric acid, Ammonia solution, picric acid, Hexane.

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Preparation of the plant extract

The leaves of the selected plants were removed from the plants and then washed under running tap water to remove dust. e plant samples were then air dried for few days and the leaves were crushed into powder and stored in polythene bags for use. The plant powder was taken in a test tube and distilled water was added to it such that plant powder soaked in it and shaken well. The solution then filtered with the help of filter paper and filtered extract of the selected plant samples were taken and used for further phytochemical analysis. As the plant material we are using for our research is oil there is no need to prepare the extract.

Test for phlobatannins

Plant powder sample was mixed with distilled water in a test tube, then shaken it well, and etered to take plant extract. en to each plant extract, 1% aqueous hydrochloric acid was added and each plant sample was then boiled with the help of Hot plate stirrer. Formation of red colored precipitate connected a positive result.

Test for reducing Sugar

An amount of 0.50 g of selected plant sample was added in 5 ml of distilled water. en 1 ml of ethanol mixed in plant extract. A er that we took 1 ml of Fehling solution A and 1 ml of Fehling solution B in a test tube, heated it to boiling and then poured it in the aqueous ethanol extract. When color reaction was observed, it shows a positive result.
Preliminary Phytochemical Analysis And Total Phenol Content Of Walnut Oil

Test for terpenoids

An amount of 0.8 g of selected plant sample was taken in a test tube, then poured 10 mL of methanol in it, shaken well and itered to take 5 mL extract of plant sample. en 2 mL of chloroform were mixed in extract of selected plant sample and 3 mL of sulphuric acid were added in selected sample extract. Formation of reddish brown color indicates the presence of terpenoids in the selected plants.

Test for flavonoids

For the conformation of flavonoid in the selected plants, 0.5 g of each selected plant extract were added in a test tube and 10 mL of distill water, 5 mL of dilute ammonia solution were added to a portion of the aqueous filtrate of each plant extract followed by addition of 1 mL concentrated H2SO4. Indication of yellow color shows the presence of flavonoids in each extract.

The total phenolics content of H. radicata was estimated using Folin-Ciocaltaue reagent by the method of Sidduraju and Becker [19]. About 20 μg of leaf and root extracts were taken separately and it was made up to 1 mL with distilled water. Then 500 μL of diluted Folin-phenol reagent (1:1 ratio with water) and 2.5 mL of sodium carbonate Na2CO3 (20%) were added. The mixture was shaken well and incubated in dark condition for 40 min for the development of colour. After incubation, the absorbance was measured at 725 nm. A calibration curve of gallic acid was constructed and linearity was obtained in the range of 10-50 μg/mL. The total phenolics content in the plant extracts were expressed as mg of gallic acid equivalent (mg GAE/g extract) by using the standard curve.

Total phenolics content

<table>
<thead>
<tr>
<th>S.no</th>
<th>Plant sample</th>
<th>phlobatannins/terpenoids</th>
<th>flavonoids</th>
<th>alkaloids</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Walnut oil</td>
<td>++</td>
<td>++</td>
<td>-</td>
</tr>
</tbody>
</table>

The study has revealed the presence of phytochemicals hence walnut can be considered to have certain medical properties. Other than flavonoids all other components are present in walnut oil. And the total phenol content of walnut oil has also been estimated

Nuts Total phenols
Walnut (oil) 12mg of Gallic acid /1g of walnut oil

CONCLUSION

The selected ten medicinal plants are the source of the secondary metabolites i.e., alkaloids, flavonoids, terpenoids, phlobatannins and reducing sugars. Medicinal plants play a vital role in preventing various diseases. e antdiuretic, anti-inflammatory, antianalgesic, anti- cancer, anti-viral, anti-malarial, anti-bacterial and anti-fungal activities of the medicinal plants are due to the presence of the above mentioned secondary metabolites. Medicinal plants are used for discovering and screening of the phytochemical constituents which are very helpful for the manufacturing of new drugs.

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How to cite this article:
DOI: http://dx.doi.org/10.24327/ijcar.2017.3202.0224