Comparative study on estimation of polyphenols in different extracts of
Moringa oleifera leaves and fruits with respect to tannic acid

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ABSTRACT

Context: Comparative study of polyphenol content in different extracts of Moringa oleifera leaves and fruits. Materials and Methods: Materials required for this study are dried methanolic extract of leaves and fruits of Moringa oleifera, Butanol, Ethyl acetate, Water, folin ciocalteu reagent, Saturated solution of Sodium carbonate. Take 10g of methanolic extract of M. oleifera leaves and fruits, dissolved in 100 ml of water, make partition with ethyl acetate and with butanol. Then concentrate the three extracts separately with the help of rotavapour. Then estimate the content of poly phenols in different extracts of leaves and fruits by using folin ciocalteu reagent method. Results: The poly phenol content of leaves and fruits of M.oleifera present in the different extracts. Conclusion: Total polyphenolic content is more in leaves compared to fruits. In leaves poly phenol content was enriched in butanol fraction and in fruits polyphenol enriched fraction was water.

Key words: Methanolic extract of M.oleifera leaves and fruits, folin ciocalteu reagent, saturated sodium carbonate solution

INTRODUCTION

Moringa oleifera (Family: Moringaceae) known as Drumstick tree in English has an impressive range of medicinal uses with high nutritional value. Different parts of this plant contain a profile of various important minerals and are a good source of proteins, vitamin A, C and E, β-carotene , amino acids and various poly phenolics.

The moringa plant is a rich and rare source of combination of zeatin, quercetin, β-sitosterol, caffeoylquinic acid, Kaempferol, kaemperfitrin,Isoqueretin, rhamnetin, rhamnose and also in a fairly unique group of compounds called glucosinolates and isothiocyanates. The leaves are also rich source of essential amino acids such as methionine, cystine, tryptophan, and lysine with a high content of proteins. The extract of leaves, seeds and roots of Moringa oleifera have been extensively studied for many potential uses including wound healing, anti-tumour, anti-fertility, hypotensive and analgesic activity, antipyretic, antiepileptic, antibacterial, antifungal, antioxidant etc., The paste of the leaves I used as an external application for wound. Moringa oleifera leaves are a good source of natural antioxidants. Very few methods have been reported for the estimation of polyphenols present in Moringa plant. As per the literature review, there is no experimental evidence presently available with regard to the quantification of polyphenols with respect to tannic acid. Hence, the present study was carried out in an attempt to quantify the amount of total phenolic compounds in methanolic leaf and fruit extract of Moringa oleifera.

MATERIALS AND METHODS:

PREPARATION OF STANDARD TANNIC ACID SOLUTION:

20 mg of pure dried tannic acid was weighed accurately and dissolved in 20ml of HPLC grade water in 100ml volumetric flask followed by sonication for 6 min and boiled for 5 min then make upto 100ml with HPLC grade water. Then 2ml of solution was pipetted out and transferred into 100 ml of volumetric flask, and then 5 ml of folin ciocalteu reagent and 10 ml of saturated sodium carbonate solution were added. This was kept aside till blue colour was developed.

The colour development depends upon the concentration of polyphenols present in the solution.

PREPARATION OF DIFFERENT EXTRACTS OF M.oleifera LEAVES AND FRUITS:

Fresh fruits and leaves of M.oleifera were cleaned with water and external moisture wiped out with a dry cloth, dried in a hot air oven at 50 C for 1 hr. Then dried samples were then powdered in blander for further study. Some of the plants dried under shade so as to prevent the decomposition of chemical compounds present in them. 300–400 mg of samples (fractions of Ethyl acetate, butanol, and water) was weighed and solutions was prepared as same procedure followed for the preparation of standard tannic acid solution.

RESULTS AND DISCUSSION:

Phenols comprise the largest group of plants secondary metabolite. Phenolic compounds are commonly found in both edible and non-edible plants and they have been reported to have multiple biological effects, including antioxidant property. Total phenol is usually determined in powder crude drugs, extracts and beverages by using the Folin-Ciocalteus method. This test is based on the oxidation of phenolic groups with phosphomolybdic and phosphotungstic acids. After oxidation a green blue complex formed is measured at λ max 765nm. Total poly phenol content is more in M.oleifera fruits compared to leaves. These poly phenols are having anti oxidant activity. If the compound is having anti oxidant activity then it is a having potent anti cancer activity. So fruits are having more anti cancer activity compared to leaves.

These poly phenols are distributed more in butanolic extract of leaves and in the case of fruits, mostly in water fraction.

ABBREVIATIONS:


REFERENCES:


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