International Journal of Botany Studies
ISSN: 2455-541X; Impact Factor: RJIF 5.12
Received: 21-02-2021; Accepted: 06-03-2021: Published: 15-03-2021
www.botanyjournals.com
Volume 6; Issue 2; 2021; Page No. 175-179

Preliminary phytochemical screening of different solvent mediated extracts of genus *Cucumis* L. and *Momordica* L. of family Cucurbitaceae from Northern India

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Abstract
Medicinal plants have bioactive compounds which are used to curing of various diseases. In this present investigation involves six plants of genus *Cucumis* L. and *Momordica* L. were studied for different solvents Viz. Acetone, methanol, petroleum ether, chloroform were used to obtain extracts from produced plant fruits. The extracts were subjected to qualitative phytochemical screening using standard procedure. Phytochemical screening reveals the presences of Alkaloids, Saponins, Tannins, Steroids, Glycosides and Flavonoids etc.

Keywords: phytochemical analysis, fruits, primary and secondary constituents

Introduction
Nowadays, the use of plant bioactive constituents as medicine is gaining much importance as compared to synthetic drugs due to their minimum side effect as compared to chemical drug. According to World Health Organization (WHO), about 65% of the world population is relied on medicinal plants as primary source of healthcare [1]. It has been estimated that about 50% of the medicines developed since 1980 are derived from natural product derivatives and their analogs [2, 3]. Further, it has been said that approximate 25% of the currently being used modern medicines are derived from plants bioactive constituents [3], that include analgesics, cardiovascular tonics, anticancer and antimalarial drugs [4]. Activities of these formulations can be enhanced by manipulating through combinations with other chemical constituents and by synthetic chemistry that can lead to exploitation of new drugs research and development in field of pharamacy [5, 6]. Phytochemicals are the natural bioactive constituents found in plants. This phytochemicals works along with nutrients and fibers and form an integrated part of defense system against various diseases and stress conditions [7]. Such phytochemicals include alkaloids, terpenoids, phenolics and fibres [8, 9, 10, 11]. Out of total 4000 phytoconstituents, 150 have been investigated in detail [10]. These have been classified on the bases of their physical and chemical properties and protective nature [12]. Phytochemicals are basically divided into two groups, i.e. primary and secondary; according to their function in plant metabolism and action. Primary comprises sugars, amino acid, proteins, carbohydrates etc. while secondary metabolites consists of steroids, alkaloids, terpenoid, flavonoids and so on. Phytochemicals rich diet is important for human health due to their considerable antioxidant properties [13, 14] a series of other physiological processes [15, 16]. Therefore the use of of different plants for their potential uses need to be explored in developing countire [17, 18]. The present study presented the qualitative phyto chemicals of 6 species of two genera *Cucumis* L. and *Momordica* L. from Northern India to cure various ailments.

Materials and Methods
Collection and identification of plant
In the present study, six plant species of two genera, *Cucumis melo.* L., *C. melo*. Var. *agrestis* (2 morphotypes), *C. melo*. Var. *momordica*, *Momordica charantia* L., *M. balsamina* L., and *M. dioica* L. Were collected from different parts of Northern India (Table 1). The voucher specimens (2411-17) are submitted to the Herbarium, Mata Gujri College, Fatehgarh Sahib, after proper identification and geographical data is presented in table 1.

Table 1: The data showing name, codes, accession numbers and geographical details of different species of *Cucumis* L. and *Momordica* L.

Name of the Taxon	Accession Number(s)	Localities with Geographical Coordinates	Altitudes (in meters)
1	2411	Amritsar, Punjab 31˚20'N, 76˚24'E	252
2	2412	Barnala, Punjab 30˚23'N, 75˚31' E	226
3	2413	Sri Ganga Naga 29.91º N, 73.83º E	178
4	2414	Panchkula, Haryana	365
5	2415	Sangrur, Punjab 30˚12'N, 75˚53'E MB-MeOH	231
6	2416	Chail, Himachal Pradesh 30.96º N, 77.19º E	2250
7	2417	Jaipur, Rajasthan 26.91^0 N, 75.78^0 E	431

Preparation of plant extracts
The fresh plant fruits were collected and washed under the running tap water to remove dust particles and other debris. The fruits were air dried under at room temperature for few days. The dried fruits samples were ground well in to a fine powder with the help of mixer grinder. A 100gm air dry plant was soaked into 500ml organic solvents i.e. Methanol, Chloroform, Aqueous, Acetone and petroleum ether

separately for 24 hrs at normal temperature.. The extracts were filter through the Whatman filter paper No: 1. The extract was allowed to dry using rotary evaporator and percentage yield was calculated. The condensed extracts were stored in airtight container at 40 ^{0}C till further investigation.

Phytochemical Analysis
Phytochemical analysis was determined to identify phytochemicals in the Chloroform, Aqueous, Methnol, Acetone and Petroleum ether extracts of plant fruits were used in this present work, the phytochemicals were detected by standard colour tests. Phytochemicals screening of the extracts was performed as described by [18, 19].

Test for alkaloids
Of each extract 2ml was acidified with a few drops of dilute hydrochloric acid and 1ml of Dragendorff's reagent was added. The appearance of orange to red precipitate indicated the presence of alkaloids.

Test for tannins
To 2ml of each extract a few drops of 10% lead acetate were added. The appearance of white precipitate indicates the presence of tannins.

Test for saponins
To 1ml of extract, 9ml of distilled water was added, shaken vigorously for few econds and was allowed to stand for 10 min. Formation of stable foam indicates the presence of saponins.

Test for steroids
10ml chloroform was added to 2ml of all plant extracts. To these extracts 1ml of acetic anhyride was added, then 2ml of concentrated sulphuric acid was added along the sides of the test tube. Colour formation at the junction is noted. The appearance of blue green colour indicates the presence of steroids.

Test for Triterpenoids
The test for Triterpenoids is same as that for steroids the appearance of red, pink colour or violet colour at the junction indicates the presence of Triterpenoids.

Test for glycosides
To 1ml of each extract a few drops of glacial acetic acid and ferric chloride and 3-4 drops of concentration sulphuric acid were added. The appearance of blue-green colour indicates the presence of glycosides.

Test for flavanoids
4ml of extract solution was treated with 1.5ml of methanol solution. The solution was warmed and metal magnesium was added to this solution 5-6 drops of Con. HCl acid were added and colour was observed for flavonoids and orange colour for flavones.

Test for reducing sugar
To 0.5ml of extract solution, 1ml of water and 5-8 drops of Fehling's solution was added to the test tube hot and observed for brick red precipitate.

Results
The phytochemical test was done by various plant fruit extracts with different solvents acetone, methanol, aqueous, petroleum ether and chloroform were done by colour test. The results were presented in following the tables 2-8.
Phytochemical test was carried out among the six medicinal plant extracts of the different solvent are processed to determine the phytochemical constitutents and to detect the presence of secondary metabolite such as flavonoid, tannins, terpenoid, steroid, alkaloid, saponins, reducing sugar, using standard phytochemical method as reported by sofowora [19]. This test indicates the presence of various bioactive secondary product which are responsible for their medicinal attributes. Phyto chemical analysis of plants was need of today to discover and extended to novel therapeutically agents with improved potentiality. In this process deals with the secondary based on phytochemical test of six plants of genus *Cucumis* L. and *Momordica* L. were investigated to contain some specific phyto-constituents. The detailed information of phytochemicals in various solvent are used to the process of are shown in the above mention tables. This paper mainly revealed to the phytochemical constituents as secondary metabolites and that can be used in pharmaceutical industry to produce efficient drugs. This study indicating result of the above medicinal plants gives a basis of application in traditional medicine, and also contain some bioactivity of phytochemical constituents was more valuable. Qualitative analysis of photochemical was more interesting area and also important application of biomedical in pharmaceutical industries. This phytochemical analysis was very useful finding chemical compound in the plant material that lead to their quantitative estimation and locating the pharmacy field [20, 21, 22, 23].

Table 2: Qualitative phytochemical analysis of the successive extracts of the fruits of *M. charantia* L.

Phytochemicals Tested	Fruit extracts of different morphotypes of *Momordica charantia* L.				
	Aqueous	Ethanol	Chloroform	Petroleum ether	Acetone
Tannins	-ve	-ve	-ve	**+ve**	**-ve**
Saponins	+ve	+ve	+ve	**-ve**	**+ve**
Terpenoids	+ve	+ve	+ve	**+ve**	**-ve**
Steroids	+ve	+ve	+ve	**+ve**	**-ve**
Flavonoids	-ve	+ve	+ve	**-ve**	**-ve**
Alkaloids	+ve	+ve	-ve	**+ve**	**+ve**
Glycosides	-ve	+ve	+ve	**+ve**	**-ve**
Reducing sugar	+ve	+ve	+ve	**+ve**	**+ve**

Table 3: Qualitative phytochemical analysis of the successive extracts of the fruits of *M. balsamina* L.

Phytochemicals Tested	Fruit extracts of different morphotypes of *Momordica balsamina* L.				
	Aqueous	Ethanol	Chloroform	Petroleum ether	Acetone
Tannins	+ve	+ve		+ve	-ve
Saponins	+ve	-ve		-ve	+ve
Terpenoids	+ve	+ve		+ve	-ve
Steroids	+ve	-ve		+ve	-ve
Flavonoids	+ve	+ve		-ve	-ve
Alkaloids	+ve	+ve		+ve	Ve
Glycosides	-ve	-ve		-ve	-ve
Reducing sugar	+ve	+ve		+ve	-ve

Table 4: Qualitative phytochemical analysis of the successive extracts of the fruits of *M. dioica* L.

Phytochemicals Tested	Fruit extracts of different morphotypes of *momordica dioica* L.				
	Aqueous	Ethanol	Chloroform	Petroleum ether	Acetone
Tannins	+ve	-ve	-ve	-ve	-ve
Saponins	+ve	+ve	-ve	-ve	+ve
Terpenoids	+ve	+ve	-ve	+ve	-ve
Steroids	+ve	+ve	-ve	+ve	-ve
Flavonoids	+ve	+ve	+ve	+ve	-ve
Alkaloids	+ve	+ve	-ve	-ve	-ve
Glycosides	+ve	+ve	-ve	-ve	-ve
Reducing sugar	+ve	+ve	-ve	-ve	-ve

Table 5: Qualitative phytochemical analysis of the successive extracts of the fruits of *Cucumis melo* L.

Phytochemicals Tested	Fruit extracts of Cucumis melo L.				
	Aqueous	Ethanol	Chloroform	Petroleum ether	Acetone
Tannins	+ve	-ve	-ve	-ve	-ve
Saponins	+ve	-ve	-ve	-ve	+ve
Terpenoids	+ve	+ve	-ve	+ve	-ve
Steroids	+ve	+ve	-ve	+ve	-ve
Flavonoids	+ve	+ve	+ve	+ve	-ve
Alkaloids	+ve	-ve	-ve	-ve	+ve
Glycosides	-ve	-ve	-ve	-ve	-ve
Reducing sugar	+ve	+ve	-ve	+ve	+ve

Table 6: Qualitative phytochemical analysis of the successive extracts of the fruits of *Cucumis melo* var. *agrestis* L. (Morphotpe I)

Phytochemicals Tested	Fruit extracts *Cucumis melo* var. *agrestis* L.				
	Aqueous	Ethanol	Chloroform	Petroleum ether	Acetone
Tannins	+ve	+ve	+ve	+ve	+ve
Saponins	+ve	+ve	+ve	+ve	+ve
Terpenoids	+ve	-ve	+ve	+ve	-ve
Steroids	+ve	-ve	+ve	+ve	-ve
Flavonoids	+ve	+ve	+ve	+ve	+ve
Alkaloids	+ve	+ve	+ve	+ve	+ve
Glycosides	+ve	+ve	+ve	+ve	+ve
Reducing sugar	+ve	+ve	+ve	+ve	+ve

Table 7: Qualitative phytochemical analysis of the successive extracts of the fruits of *Cucumis melo* var. *agrestis* L. (Morphotpe II)

Phytochemicals Tested	Fruit extracts *Cucumis melo* var. *agrestis* L.				
	Aqueous	Ethanol	Chloroform	Petroleum ether	Acetone
Tannins	+ve	+ve	+ve	+ve	+ve
Saponins	+ve	+ve	+ve	+ve	+ve
Terpenoids	+ve	-ve	+ve	+ve	-ve
Steroids	+ve	-ve	+ve	+ve	-ve
Flavonoids	+ve	+ve	+ve	+ve	+ve
Alkaloids	+ve	+ve	+ve	+ve	+ve
Glycosides	+ve	+ve	+ve	+ve	+ve
Reducing sugar	+ve	+ve	+ve	+ve	+ve

Table 8: Qualitative phytochemical analysis of the successive extracts of the fruits of *Cucumis melo var. momordica* L.

Phytochemicals Tested	Fruit extracts of different morphotypes of *Cucumis melo var. momordica* L.				
	Aqueous	Ethanol	Chloroform	Petroleum ether	Acetone
Tannins	+ve	-ve	-ve	-ve	-ve
Saponins	+ve	-ve	-ve	-ve	+ve
Terpenoids	+ve	+ve	-ve	+ve	-ve
Steroids	+ve	+ve	-ve	+ve	-ve
Flavonoids	+ve	+ve	+ve	+ve	-ve
Alkaloids	+ve	-ve	-ve	-ve	-ve
Glycosides	-ve	-ve	-ve	-ve	-ve
Reducing sugar	-ve	-ve	-ve	-ve	-ve

Discussion

Plant derived substances have already have become a great interest of pharmaceutical industry owing to their versatile applications. Medicinal plants are richest source of drugs of traditional system of medicine and provide chemical entities for synthetic drugs [24]. These chemicals are produced by the plants to protect their selves from various diseases. The presence of phenolic compounds in the plants indicates that these plants may be antimicrobial agents [25]. Tannins have stringent properties that hasten the property of wound healing. Flavanoids are water soluble antioxidants preventing cell-damage and also have anticancer activity [26, 27]. Saponin have property to precipitate and coagulate red blood cells [28, 27]. Tarpenoids cause membrane disruption action and inhibitory action on bacterial cell or fungus [29]. Glycosides may be used in cardiac treatment of congestive heart failure [29]. Saponins have anti- inflammatory, antiviral, antifungal, piscidal and anti-bacterial activity [30].
In this way data shows that these plants can be used as therapeutic agent for treatment of various diseases. However there is need to carry advanced spectroscopic studies to elucidate the structure of these compounds, and moreover this data may be useful in probing the biochemistry of these plants for use in future.

Conclusion

Screening of six medicinal plants was analysed, showed that maximum classes of phyto-constituents are present that can have highest therapeutic efficiency in pharmaceutical field. The six plant extract to indicate the more positive result. The plants extract were to determine the presence of phyto-constituents. The medicinal plants have been used to treatment of so many disease and their medicinal roles of these plants have such a secondary product and identified the bioactive compounds. This paper reveals that above five medicinal plants gives a basis of its use in medicine and develop to further drugs in pharmaceutical area and also contains different biologically active constituents, and secondary product are valuable of further analysis.

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