RESEARCH ARTICLE

ETHNOBOTANICAL EXPLORATION AND PHYTOCHEMICAL SCREENING OF SELECTED SPICES USED BY THE NATIVE OF BARGARH DISTRICT, ODISHA, INDIA

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Abstract:

The objective of this study is the ethnobotanical exploration and phytochemical screening of plants belonging to the spices category from Bargarh district of Odisha. The plants were tabulated as scientific name, family name, local name, the parts used, and traditional uses. For phytochemical analysis ten selected fresh parts of species were collected. The results revealed that alkaloids showed positive results in the ethanol extracts of all the selected spice/plant species, while quinones and anthraquinones showed negative results in all. Phenolic compounds, flavonoids, and saponins were also quite abundant in most species. The ethanol extract of *Allium sativum* (bulb) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, glycosides, saponins, steroids and carbohydrates. The ethanol extract of *Brassica juncea* (seeds) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids & triterpenoids, glycosides and proteins. The ethanol extract of *Cinnamomum verum* (bark) showed positive results for alkaloids, phenolic compounds, tannins, saponins and protein. The ethanol extract of *Cuminum cyminum* (seeds) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids & triterpenoids, glycosides, saponins and steroids. The ethanol extract of *Curcuma longa* (rhizome) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids & triterpenoids, glycosides, saponins and carbohydrates. The ethanol extract of *Coriander sativum* (seeds and leaves) showed positive results for alkaloids, flavonoids, phenolic compounds, terpenoids & triterpenoids, saponins, steroids and carbohydrates. The ethanol extract of *Elettaria cardamomum* (fruits and seeds) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids & triterpenoids, saponins, carbohydrates and proteins. The ethanol extract of *Syzygium aromaticum* (flower buds) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids % triterpenoids, steroids, carbohydrates, and proteins. The ethanol extract of *Trigonella foenum-graceum* (leaves) showed alkaloids, phenolic compounds, tannins, saponins, and proteins. The ethanol extract of *Zingiber officinale* (rhizome) showed positive results for alkaloids, flavonoids, tannins, glycosides, saponins, and carbohydrates.

Keywords: Ethnobotany, Phytochemical Screening, Spices, Bargarh District, Odisha.

Introduction:

Medicinal plants are an integral part of Ayurveda and traditional practices, and these are also useful for modern research studies and medicine-making to treat various diseases and make human life healthier and happier. These medicinal plants are studied very broadly as a useful source of Phytochemicals that are used for the production of drugs and medicines (Sharma *et al.,* 2020). Plants contain numerous classes of chemicals known as Phytochemicals (Mercy *et al.,* 2017). Phytochemicals are mostly the primary and secondary metabolites that contribute in some secondary functions such as plant growth, activating the defence mechanism of the plant, and safeguarding the plant. These also impart colour, odour, and flavour to the plants (Molyneux *et al.,* 2007).

The plants synthesized natural chemicals and their derivatives have next to no side effects and better efficiency than artificially synthesized ones. These compounds are the primary and secondary metabolites, synthesized by primary or rather secondary metabolic pathways inside the living plant cells. These phytochemicals such as alkaloids, flavonoids, phenolic compounds, tannins, terpenoids and triterpenoids, glycosides, saponins, quinones and anthraquinones, steroids, sterols, carbohydrates and proteins, contribute in the secondary functions of the plants and elevate the therapeutic properties like antioxidant properties, anti-inflammatory properties, anticarcinogenic properties, antidiuretic properties, antimutagenic properties, antidiabetic properties, antimicrobial properties and anti-cancerous properties. The scientific process of analyzing, examining, extracting, experimenting, and thus identifying different classes of phytochemicals present in various parts of the plant is known as Phytochemical Screening (Sharma *et al.,* 2020). Phytochemical screening forms the base for the discovery of drugs, and the active compounds could be further taken for investigation and research. The qualitative phytochemical tests reveal the presence or absence of important phytochemicals in the plant species. These phytochemicals can be derived from plant parts like bark, leaves, flowers, roots, rhizomes, fruits, seeds, etc. They are widely studied and used in the preparation of medicinal drugs for conventional and pharmaceutical uses.

The present study focuses on a specific group of plant species that are mainly used as spices. Spices are any seed, fruit, root, bark, or other plant parts that are used in a specific manner to add flavour and colour to food. These spices are sometimes aromatic and pungent. For centuries, spices and herbs have been used for cooking and the preparation of medicines. Spices not only add a variety of flavours to the dishes, but due to their rich phytochemical contents, they also provide numerous health benefits.

India is the most acknowledged country for spices and herbal medicine in the world since ancient times. Spices are made from different parts of a plant, such as dried seeds, bark, root, fruits, flowers, anthers, buds, leaves, etc. They are used in adequate amounts in food as flavouring and colouring agents that create visual appeal and craving for people all over the world (Anjali and Naganagouda, 2024). The culinary and medicinal uses of spices and herbs date back centuries in most early civilizations. In most cultures and cuisines around the world, spices are used as adjuncts to flavour, colour, or enhance the taste of food. Since spices have strong flavours, they are usually used in small quantities and thus don't add many calories to diets. The objective of this study is the ethnobotanical exploration and phytochemical screening of plants belonging to the spices category.

Materials and Methods:

Study Site

Bargarh is located in the western region of Odisha at an altitude of 171 meters above sea level with a latitude and longitude of 21.342585° North and 83.624199° East, respectively. The climate of the Bargarh district is mostly tropical and temperate. (Sahu *et al.,* 2010; Sahu *et al.,* 2013; Sahu *et al.,* 2016; Sahu *et al.,* 2021; Sahu and Mishra, 2022). The plants and ethnobotanical data were collected by frequent exploration throughout the area, but before that, a survey was done by taking observations and direct personal interviews of the locals and experts about the use of medicinal plants found in their locality. The information about the ethnomedicinal uses for selected plants were documented and photographs were taken. The scientific names and family names were further checked by using local flora book (Saxena and Brahman, 1994-1996). Further the local names were cross checked by using different studies carried out by various authors in Odisha (Sahu *et al.,* 2010; Sahu *et al.,* 2013; Sahu *et al.,* 2016; Sahu and Sahu, 2017, 2019, 2020, 2022, 2023, 2024; Sahu *et al.,* 2020; Sahu and Ekka 2021; Sahu and Raal, 2024, Sahu *et al.,* 2024). The plants were tabulated as scientific name, family name, local name, the parts used, and traditional uses.

For phytochemical analysis ten selected fresh parts of species were collected from different parts of the Bargarh district of Odisha state. Collected plant parts were washed thoroughly and cut into small pieces. The parts were then shade-dried for about four days and then dried in an electrical dryer for another seven days. The dried plant parts were then ground into fine powder using a grinder. 20 grams of each powdered sample were taken in conical flasks, and 250ml ethanol was added. The flasks were gently shaken for some time at room temperature (Yadav *et al.,* 2011). Maceration is essential as it breaks the cell wall of plant cells and releases the phytochemical contents into the solvent (Handa *et al.,* 2008). All these processes were performed in laboratory conditions. The ethanol extracts of all the selected plants were obtained.

Qualitative Phytochemical Analysis:

For phytochemical analysis following modified protocols were carried out (Nayak *et al.,* 2024; Sahu *et al.,* 2024; Sharma *et al.,* 2024; Rani *et al.,* 2025).

Test for alkaloids:

Wagner's reagent: 1.27 gm of iodine and 2 gm of potassium iodide were dissolved in 5ml of distilled water. To this, 2 ml of plant extract was added. The appearance of brown flocculent precipitate indicates the presence of alkaloids.

Test for flavonoids:

***Sinoda test*:** 10 drops of diluted extract were dissolved in 5ml ethanol (95%) and treated with 3 drops of concentrated hydrochloric acid and 0.5 gm of magnesium turnings. Development of either pink or magnet colour indicates the presence of flavonoids.

Test for phenolic compounds and tannins:

***Ferric chloride test*:** The extract (50 mg) is dissolved in 5ml of distilled water. To this, a few drops of neutral 5% ferric-chloride solution are added. A dark green colour indicates the presence of phenolic compounds and tannins.

Test for terpenoids: 20 ml of ethanol extract was dissolved in 1 ml of chloroform, and 1 ml of concentrated sulphuric acid was added to it. Changes of reddish-brown colour of the extracts indicates the presence of terpenoids.

Test for glycosides:

***Libermann's test*:** The ethanol extract was mixed with 2ml of chloroform and 2ml of acetic acid. The mixture was cooled in ice. Carefully concentrated sulphuric acid was added. The colour of extract changes from violet to bluish-green indicates the presence of glycosides.

Test for saponins: The ethanol extract was mixed with 5 ml of distilled water in a test tube and shaken vigorously. The formation of a stable froth

was taken as an indication of the presence of saponins.

Test for quinones and anthraquinones:

***Bontrager's test*:** 3ml of each extract were treated with 3ml of chloroform, and the chloroform layer was separated. To this, 5% potassium hydroxide dissolution was added. The occurrence of the red colour in alkaline phage indicates the presence of quinones. Those samples showing yellow colour with green fluorescence were treated with one drop of 6% hydrogen peroxide; formation of red colour indicates the presence of anthrones derivatives.

Test for steroids:

***Salkowski test*:** 2ml of chloroform and 1ml of concentrated sulphuric acid were added to 10 drops of the extract dissolved in isopropyl alcohol, slowly until double phage formation. The presence of a dish-brown colour in the middle layer indicates the presence of a steroidal ring.

Test for carbohydrates:

***Benedict's test*:** The ethanol extract was mixed with 2ml of Benedict's reagent and boiled. The appearance of a reddish-brown precipitate indicates the presence of carbohydrates.

Test for proteins:

***Millon's test*:** To the ethanol extract, 2ml of Millon's reagent was added. A white precipitate formed that, upon heating, turned red colour, this indicates the presence of proteins.

Results:

The ethnobotanical details of selected ten spices from Bargarh district were mention in Table 1. All the phytochemicals (alkaloids, flavonoids, phenolic compounds, tannins, terpenoids and triterpenoids, glycosides, saponins, quinones and anthraquinones, steroids, carbohydrates and proteins) present or absent in the ethanol extracts assayed and summarises in Table 2. The results disclosed that alkaloids showed positive results in the ethanol extracts of all the selected spice/plant species, while quinones and anthraquinones showed negative results in all. Phenolic compounds, flavonoids, and saponins were also quite abundant in most species. The ethanol extract of *Allium sativum* (bulb) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, glycosides, saponins, steroids and carbohydrates. The ethanol extract of *Brassica juncea* (seeds) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids and triterpenoids, glycosides and proteins. The ethanol extract of *Cinnamomum verum* (bark) showed positive results for alkaloids, phenolic compounds, tannins, saponins and protein. The ethanol extract of *Cuminum cyminum* (seeds) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids and triterpenoids, glycosides, saponins and steroids. The ethanol extract of *Curcuma longa* (rhizome) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids and triterpenoids, glycosides, saponins and carbohydrates. The ethanol extract of *Coriander sativum* (seeds and leaves) showed positive results for alkaloids, flavonoids, phenolic compounds, terpenoids and triterpenoids, saponins, steroids and carbohydrates. The ethanol extract of *Elettaria cardamomum* (fruits and seeds) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids and triterpenoids, saponins, carbohydrates and proteins. The ethanol extract of *Syzygium aromaticum* (flower buds) showed positive results for alkaloids, flavonoids, phenolic compounds, tannins, terpenoids, triterpenoids, steroids, carbohydrates, and proteins. The ethanol extract of *Trigonella foenum-graceum* (leaves) showed alkaloids, phenolic compounds, tannins, saponins, and proteins. The ethanol extract of *Zingiber officinale* (rhizome) showed positive results for alkaloids, flavonoids, tannins, glycosides, saponins, and carbohydrates.

Table 1: Traditional uses of selected spices from Bargarh district, Western Odisha, India

Scientific name	Family	Common name	Parts used	Traditional uses
Allium sativum L.	Amaryllidaceae	Garlic	Bulb	Potent antioxidant, control Blood pressure and blood cholesterol level, antimicrobial properties.
Brassica juncea (L.) Czern	Brassicaceae	Mustard	Seeds	Used as an anti-inflammatory for cold and fever. Used to treat bronchitis and indigestion.
Cinnamomum verum J. Presl	Lauraceae	Cinnamon	Bark	Treat headache, abdominal pain, dysentery, diarrhoea, cough and nausea. Act as tonic for digestion.
Cuminum cyminum L.	Apiaceae	Jeera or cumin	Seeds	Potent for boosting immune system. Also help in digestion and controlling blood sugar level.
Curcuma longa L.	Zingiberaceae	Turmeric	Rhizome	Used as antiseptic on wounds, and anti-inflammatory for chronic pain and skin diseases.
Coriander sativum L.	Apiaceae	Coriander	Seeds and leaves	Treat chronic large intestine disorders, reduce blood sugar level, used to cure fever, diarrhoea, nausea.
Elettaria cardamomum (L.) Maton	Zingiberaceae	Elaichi	Fruits and Seeds	Boiled seeds are used to treat respiratory disorders, fruit is used for cure of constipation, piles, nausea.
Syzygium aromaticum (L.) Merr. & L.M.Perry	Myrtaceae	Clove	Flower buds	Used as a cure for indigestion, nausea, malaria, cholera. Bitten raw to treat gum infections and inflammations.
Trigonella foenum-graceum L.	Fabaceae	Fenugreek	Leaves and Seeds	Used to cure for diabetes, as an anti-inflammatory, control blood pressure and improve sexual health.
Zingiber officinale Roscoe	Zingiberaceae	Ginger	Rhizome	The rhizome is used to cure gastrointestinal problems, upset stomach. Also used for relieve from respiratory tract infections, bronchitis, cough.

Table 2: Phytochemical screening from the ethanol extracts of selected spices from Bargarh district, Odisha, India.

Bioactive compounds	***Ethanol extracts***									
	Allium sativum	*Brassica juncea*	*Cinnamomum verum*	*Cuminum cyminum*	*Curcuma longa*	*Coriander sativum*	*Elettaria cardamomum*	*Syzygium aromaticum*	*Trigonella foenum-graceum*	*Zingiber officinale*
Alkaloids	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve
Flavonoids	+ve	+ve	-ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve
Phenolic compounds	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	+ve	-ve
Tannins	+ve	+ve	+ve	+ve	+ve	-ve	+ve	-ve	+ve	+ve
Terpenoids and Triterpenoids	-ve	+ve	-ve	+ve	+ve	+ve	+ve	-ve	-ve	-ve
Glycosides	+ve	+ve	-ve	+ve	+ve	-ve	-ve	-ve	-ve	+ve
Saponins	+ve	-ve	+ve	+ve	+ve	+ve	+ve	-ve	+ve	+ve
Quinones and Anthraquinones	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve	-ve
Steroids	+ve	-ve	-ve	+ve	-ve	+ve	-ve	+ve	-ve	-ve
Carbohydrates	+ve	-ve	-ve	-ve	+ve	+ve	+ve	+ve	-ve	+ve
Proteins	-ve	+ve	+ve	-ve	-ve	-ve	+ve	+ve	+ve	-ve

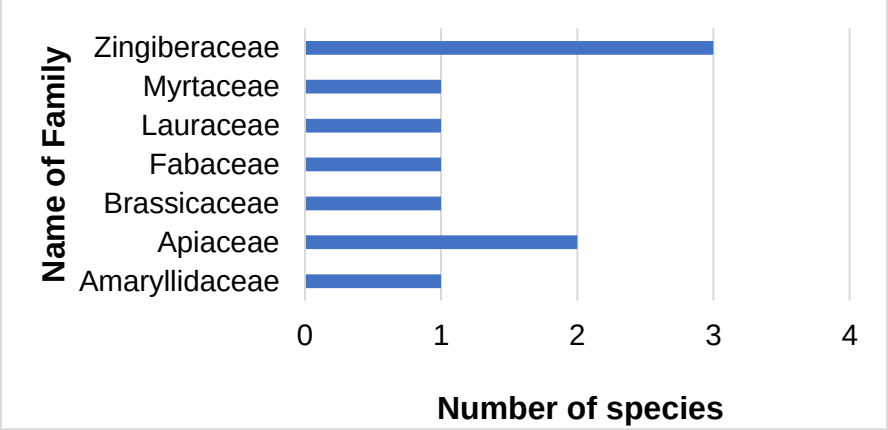

Figure 1: Histogram shows the family wise distribution of selected spices from the study sites

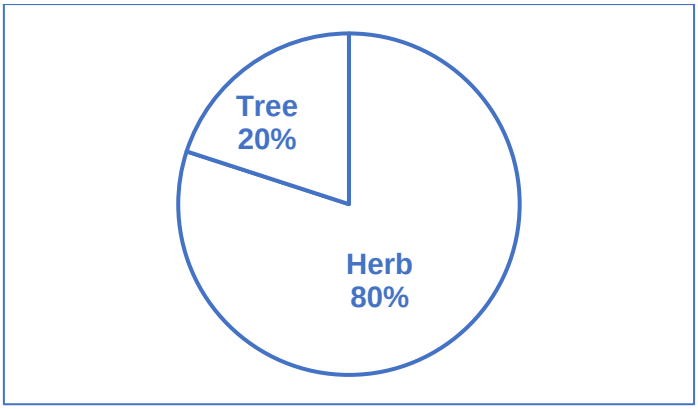

Figure 2: Pie-charts shows the habit wise distribution of selected spices from the study sites

Discussion:

For centuries, spices have been added to food, not only as flavouring agents but also as preservatives and traditional medicines. The phytochemicals in the spices are responsible for their medicinal properties, such as antioxidant, antimicrobial, anti-bacterial, anti-inflammatory, antidiabetic, and anticancer activities. Sahu *et al.*, (2010) reported the use of bulb of *Allium sativum* L. for the treatment of hypertension, ulcers, hysteria, fever, earache, acidity, and cough by the native of Bargarh district. Similar reports also given by Sahu *et al.*, (2013) from Sohela block of western Odisha. Sahu and Sahu (2017) reported the same plant part for the treatment of the gums and cavities of infected teeth. Sahu and Sahu (2019) reported that the bulb of *A. sativum* is used as a spice with soup and vegetable, it is eaten raw with food and also used for the treatment of common cold, cough by the native of Bargarh district, Odisha. Mishra *et al.*, (2022) reported that the fresh bulb juice is extracted and applied to remove maggots from wounds by the native of Bargarh district, Odisha. Sahu *et al.*, (2010) reported the use of seeds and oil of *Brassica juncea* (L.) Czern. for the treatment of rheumatism, bronchitis, and massages by the native of Bargarh district. Similar reports also given by Sahu *et al.*, (2013) from Sohela block of western Odisha. Sahu and Sahu (2019) reported that the leaves of *B. juncea* are cooked with groundnuts, seed oil is used for edible purpose, they also reported that seeds oil is used to relieve muscle pain and common cold by the rural people of Bargarh district, Odisha. Sahu *et al.*, (2024) reported that the seeds *B. juncea* are excellent for digestion, improves cardiovascular health, helps to control diabetes, and prevent asthma by the native of

Bargarh Municipality, Odisha. Sahu *et al.,* (2024) reported the use of *Cinnamomum verum* J. Presl bark to improve blood sugar regulation and insulin sensitivity, and relieves flatulence abdominal pain by the native of Bargarh Municipality, Odisha. Sahu *et al.,* (2010) reported the use of Fruits, Leaves of *Coriander sativum* L. for the treatment of Diarrhoea, and Dyspepsia by the native of Bargarh district. Sahu and Sahu (2019) reported regarding the use of tender leaves in curry preparation, seeds as spice, they also reported that leaf mixed with green chili, coconut, zinger was given to cure diarrhoea and dyspepsia by the rural people of Bargarh district, Odisha. Sahu *et al.,* (2024) reported the leaves and seeds of *Coriander* were used to prevent anaemia, improve skin health when consumed regularly, good for digestion, reduce blood sugar levels, and anti-inflammatory by the native of Bargarh Municipality, Odisha. Sahu *et al.,* (2024) reported the use of *Cuminum cyminum* L. to improves digestion, improves gastrointestinal tract activity, helps to maintain fluctuating blood pressure level in the body, help to maintain and restore memory, good for hormones and skin healing by the native of Bargarh Municipality, Odisha. Sahu *et al.,* (2010) reported the use of rhizomes of *Curcuma longa* L. for the treatment of Diarrhoea, Jaundice, Contraceptive, and Anti pox by the native of Bargarh district. Similar reports also given by Sahu *et al.,* (2013) from Sohela block of western Odisha. Sahu and Sahu (2017) reported the use of about 2-3 gm of dry rhizome powder with a drop of mustard oil and a pinch of common salt as tooth powder to protect the enamel, clean the teeth and remove bad breath of mouth by the native of Bargarh district, Odisha. Sahu and Sahu (2019) reported regarding the use of dried rhizome powder of *C. longa* as spice for colouring soups, vegetable and curry, further they also reported regarding the use of the rhizome paste for insect stings, remove the spot of pox by the rural people of Bargarh district, Odisha. Sahu and Mishra (2022) reported regarding the use of rhizome powder for the treatment of Powder of Rhizome is used as a pain reliever, antiseptic, and blood purifier by the native of Bargarh district, Odisha. Sahu *et al.,* (2024) reported the use of rhizome to improve skin health, natural anti-inflammatory, antioxidant by the native of Bargarh Municipality, Odisha. Sahu *et al.,* (2024) reported that *Cardamom* contains fibre which maintains the health of the digestive tract, maintain healthy mouth and throat by the native of Bargarh Municipality, Odisha. Sahu and Sahu (2017) reported that the flower bud of *Syzygium aromaticum* (L.) Merr. & L.M.Perry chewed to prevent bad breath by the natives of Bargarh District, Western Odisha. Sahu and Sahu (2023) reported to get relief from asthma, an equal amount of flower of *S. aromaticum* mixed with rock salt is advised to keep in mouth and suck the juice by the Gond tribe of Nabarangpur district, Odisha. Sahu *et al.,* (2024) reported that the seeds are used to promote healthy skin and hair; used to reduce cholesterol level and blood pressure condition; helps in the management of diabetes by the native of Bargarh Municipality, Odisha. Sahu *et al.,* (2010) reported the use of rhizomes of *Zingiber officinale* Roscoe for the treatment of Cold, Cough, Tooth ache, Asthma, Rheumatism, and Stomach ache by the native of Bargarh district. Similar reports also given by Sahu *et al.,* (2013) from Sohela block of western Odisha. Sahu and Sahu (2017) reported that paste of rhizomes is used to treat toothache and tooth decay. Sahu *et al.,* (2021) reported that the rhizome paste is used for the treatment of Cold, Cough, Tooth ache, Asthma, Rheumatism, and Stomach ache by Sahara tribal groups of Kangaon village of Bargarh district in western Odisha. Sahu and Mishra (2022) reported that dried rhizome of *Z. officinale* is taken along with pipal powder to cure constipation, to clear the uterus and also used as pain killer by the native of Bargarh district, Odisha.

C. longa is rich in curcumin, which has high antioxidant, antimicrobial, and anti-inflammatory properties (Nazir *et al.,* 2019; Sawant and Godghate, 2013). *Z. officinale* has high flavonoid content, which is a potent antioxidant, and also helps in the regulation of blood pressure, blood cholesterol level, and cardiac complications. The tannins present in ginger help in treating gastrointestinal diseases (Boreker *et al.,* 2018). Mahmood *et al.,* (2019) discussed the high economic nutritional value of *T. foenum-graceum* seeds and how they can be added to food supplements for humans due to their rich phytochemical content of carbohydrates, proteins, fat, flavonoids, alkaloids, and tannins. Shetty *et al.,* (2013) discussed the various medicinal properties of *E. cardamomum*, as analgesic, anti-inflammatory, antifungal, antimicrobial, gastroprotective, antihypertensive, antiplatelet, anticancer, and antioxidant properties. The rich flavonoids and tannin content add to its primary antioxidant activity. Gowri *et al.,* (2019) discussed the presence of alkaloids, flavonoids, phenols, and carbohydrates in the ethanol extract of *S. aromaticum*. These phytochemicals, especially eugenol, are responsible for the various therapeutic properties such as antiseptic, antimutagenic, antiviral, antioxidant, anti-inflammatory, antimicrobial, antifungal, and antiparasitic. Aziz *et al.,* (2020) documented the presence of medicinally active compounds like alkaloids, tannins, flavonoids, which are responsible for the antioxidant and antimicrobial activity of seeds of *B. juncea*. Lakshmanan *et al.,* (2022) study on *C. cyminum* seeds revealed the abundance of benzene ring compounds like phenolic compounds and alkaloids, that are responsible for its antioxidant, anti-inflammatory, antinociceptive, and antimicrobial properties. Kumar *et al.,* (2014) in their experiment detected the presence of bioactive compounds such as alkaloids, saponins, phenolic compounds, and carbohydrates in *C. sativum*. These phytochemicals may contribute to the plant's effectiveness in treatment of malaria, stomach pain, high blood sugar level, etc. Sharma *et al.,* (2020) documented the presence of alkaloids, phenolic compounds, flavonoids and terpenoids in *A. sativum*, and its usefulness as antioxidant, anti-inflammatory, antibacterial agent. Preethi *et al.,* (2020) in their study on *C. verum*, discussed the total phenolic content and its antioxidant properties, also its effectiveness in treating diabetes, infections, and enhancing digestion.

Conclusion:

Thus, the phytochemical screening of selected spices plants using selected plant parts was done. From the above study, it can be concluded that plants are a rich source of various kinds of phytochemical substances. These bioactive compounds provide the plant with multiple medicinal properties, which can be used in preparation of various kinds of medicine. The phytochemical screening provides the scope for identifying the specific bioactive compound present in the plant parts that are useful in treating specific diseases or have natural inhibitory properties. These phytochemicals can be extracted and then with the help of pharmacology, drugs effective against diseases and pests can be prepared. Phytochemicals such as alkaloids, flavonoids, phenolic compounds, tannins, terpenoids and triterpenoids, glycosides, saponins, steroids, carbohydrates and proteins are quite abundant in plants belonging to the spice group. Phytochemicals like these contribute to the plant's medicinal properties, as well as physiological activities, and are also useful in preparation of traditional medicines, making the specific group of plants a good natural source of important drugs. Therefore, there is a need for further studies and advanced research on these medicinally important plants for their bioactive compounds and understanding their role in treatment of disorders.

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