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Qualitative Screening of Phytochemicals of *Taraxacum officinale* F.G. Wigg and *Urtica ardens* Link

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ABSTRACT: Medicinal plants contain plethora of phytochemicals which constitutes various pharmacological activities such as antioxidant, anti-inflammatory, antibacterial, anthelmentic, anti-diabetic, immunomodulatory etc. The biological activities of medicinal plants can be used efficienty for their pharmacological action. Herbal medicine is one of the primeval forms of medicine which is prepared exclusively from herbal plants. This, study investigates the qualitative analysis of varied phytochemicals in 50 percent hydromethanolic leaves extract of *Taraxacum officinale* F.G. Wigg and *Urtica ardens* Link. Various chemical tests were performed for qualitative screening of phytochemicals in both plant extracts. The results revealed the presence of an array of phytochemicals in both plant extracts. The phytochemicals present were Alkaloids, Flavonoids, Carbohydrates, Terpenoids, Tannins, and Phenols. These all the phytocompounds have biological activities which can be utilized against various ailments. Alternative medicine based on phytomedicine can be used futuristically against resistance for synthetic pharmacological agents. *Taraxacum officinale* F.G Wigg and *Urtica ardens* Link can be utilized for manufacturing of novel therapeutic compounds. Many studies had been conducted on other species of Urticacea family such as *Urtica dioica* while properties of *Urtica ardens* has still been unexplored and not much literature is present on *Urtica ardens* pharmacological activities. Therefore, this study can give an outline about the phytoconstituents present in *Urtica ardens* as well as in *Taraxacum officinale*, and these phytoconstituents can be explored further for pharmacological actions.

Keywords: Phytochemicals, *Taraxacum officinale* F.G. Wigg, *Urtica ardens* Link, Alternative medicine.

INTRODUCTION

Phytochemistry is linked to numerous types of secondary metabolites generated by biosynthesis mechanism in plants (Sorescu *e al*., 2018). Plants contains an array of of secondary metabolites that are advantageous for the treatment and prevention of numerous illnesses. In order to protect against insect harms and plant diseases, plants biosynthesize phytochemicals. The great majority of medications are made from the compounds obtained from secondary metabolites of plants (Bakir Çilesizoğlu *et al*., 2022). Plant-based phytochemicals constitutes numerous biological actions. Plants are the primary source of many of the active chemicals used in medicinal products (Mendoza and Silva 2018). Because of its historical background and mythical belief, the ancient system of medicine, herbs, and herbal mixtures have been utilised for many years. Phytochemicals constituted in herbal plants can act as a multifaceted therapy against various intricate ailments for alleviating them. Traditional herbal remedies have strong anti-inflammatory, antioxidative, antifibrotic, and immunomodulatory properties (Wojcikowski *et al*., 2006). A natural bioactive phytocompound may have several active targets rather than a single specific target. Thus, a natural substance may perform several functions and can be widely used in various ailments.

Plants in the genus *Taraxacum* have long been utilised as medicinal herbs. Taraxacum officinale, also known as dandelion, is a perennial plant in the Asteraceae family (Di Napoli and Zucchetti 2021). For a long time, it has been utilised as a medicinal herb. Dandelion has a wide range of biologically active chemicals, explaining its medicinal potential. The most important active components are inositol, biotin, sesquiterpenic lactones, and vitamins like B, E, and D as well as phosphorus (Badr *et al*., 2019). The high phenolic content of dandelion leaves may explain several of the identified effects including anti-inflammatory, antioxidant, anticancerous, antiapoptotic, and analgesic action.

Urtica ardens Link belongs to Urticaceae family with extremely efficient medicinal properties due to its bioactive metabolites which are mainly concentrated in its leaf. Urticacea family herbs contains anti-microbial, anti-inflammatory and hypolipidemic effects (Haghju and Almasi 2015). Many studies on plants and pharmaceuticals show that they have antioxidant and anti-inflammatory properties that protect against kidney injury (Alan *et al*., 2011; Roso *et al*., 2012). Urticacea members therapeutic properties have been attributed to secondary metabolites, which can defend against infections or provide major physiological benefits in the prevention of specific diseases (Lawson *et al*., 2021). Diabetes, urinary diseases, diarrhoea, respiratory conditions, ulcers, rheumatism, and high blood pressure can all be treated with *Urtica ardens*. It can be also used for as a therapeutic compound in fever, flu, sprains, kidney stones etc and has hepatoprotective and nephroprotective effects (Shresta *et al.*, 2021).

Various anticancerous phytocompounds such sterols, sesquiterpene lactones, phenolic acids, triterpenes, and coumarins are abundant present in Taraxacum. By modulating the activity of several cancer-related factors such as NF-B, ERK, Akt, MEK, MAPK, sVCAM-1, MAPK, TNF, MMP, and IL, Taraxacum officinale phytochemicals can promote numerous cell signalling pathways (Serreli and Deiana 2019; Chen *et al*., 2019). In a study, *Taraxacum officinale* protected liver and kidney tissue of mice from oxidative damage due to acetaminophen, oxidative stress was reduced by increasing antioxidant enzymes like catalase, superoxide dismutase (SOD), and glutathione) and reducing malondialdehyde (MDA) levels (Kamal *et al*., 2022). Taraxacum can be used used efficiently as an adjunct therapy in the field of pediatric oncoogy (Menke *et al*., 2018).

Due to their active constituents such as alkaloids, terpenoids, flavonoids, minerals, phenolics, and essential oils, *Urtica* sp could serve as a sustainable and environmentally friendly alternative to hormones, antibiotics, and chemical drugs to improve growth performance, the immune system, and resistance against pathogens in fishes (Zare *et al*., 2023). It was reported that *Urtica dioica* leaf infusion increases the susceptibility of breast cancer cells to cisplatin via activation of apoptosis. Therefore, *Urtica ardens* which also belong to Urticacea family can also be used in cancer therapy like *Urtica dioica*. The reduction in cancer cell proliferation was brought on by the stimulation of apoptosis mechanism. This apoptosis was accompanied by an elevation of c-PARP, an increase in DNA fragmentation, as well as an increase in the Bax/Bcl-2 ratio, all of these indicates the activation of apoptosis (Kamal *et al*., 2022).

The two powerful enzymes involved in glucose metabolism alpha-amylase and alpha-glucosidase, were the targets of *T. officinale* leaves relatively strong antidiabetic action under in vitro circumstances in a dose-dependent manner (Murtaza *et al*., 2022). *Taraxacum* roots are a beneficial source of many classes of natural chemicals with antioxidant, anticoagulant, and anti-platelet actions (Jedrejek *et al*., 2019). By disrupting the cell wall of *Candida albicans*, Taraxacum officinale can inhibit the growth of *Candida albicans* (Liang *et al*., 2020). Via inhibiting the virulence genes expressions and by reducing the permeability of cell membrane , the phytocomponents of the *Taraxacum officinale* plant can prevent the replication of food borne pathogens, and alters the cell shape and lowering intracellular ATP content of pathogens (Wu, 2021).

MATERIALS AND METHODS

Collection of plant samples and sample extraction. The medicinal plants *viz*., *Taraxacum officinale* F.G wigg and *Urtica ardens* Link are included in this study. These plants were procured from Uttarakhand on the basis of Uttarakhand Medicinal Plants Database (UMPDB) and indigenous technical knowledge (ITK) of local communities. Identification and authentication of plant samples will be done. Leaves of both the plants were collected, washed twice with tap water and distilled water to remove the dirt and impurities, and dried for further study. Identification and authentication of entire plant specimens was done in regional station of Botanical Survey of India, Dehradun, Uttarakhand.

The process of extract preparation included various steps such as pre-washing of leaves, then shade drying of plant materials in room temperature till the moisture gets evaporated, then pulverization of dried plant leaves in mechanical grinder to obtain a powder. Maceration process, in which coarsely powdered plant materials were placed inside a container and the menstruum is poured in it. The contents inside the container were shaken from time to time to ensure complete extraction. 50 percent hydromethanol is used as a solvent/menstruum in this study for extraction in the ratio of 50:50. Afterwards, the extract was filtered using whatman filter paper No.4. For solvent evaporation, rotary evaporator was used. Dried extract was collected and stored in air-tight container in 4°C for further study.

Fig. 1. *Taraxacum officinale* F.G. wigg and its pulverized leaf powder for extract preparation.

Fig. 2. *Urtica ardens* Link and its pulverized leaf powder for extract preparation.

Qualitative screening of phytochemicals of hydromethanolic extract of *Taraxacum officinale* and *Urtica ardens.* Qualitative analysis of bioactive compounds in plant extracts was done for presence of tannins, saponins, phenols, alkaloids, flavonoids, glycosides etc.

Alkaloids detection in hydromethanolic plant extracts of leaves of both the plants. Mayer's test- Mayer's reagent is an alkaloid precipitating solution, which is utilised to detect alkaloids in organic products. Mayer's reagent was freshly made by dissolving 1.36 g of $HgCl_2$ (mercuric chloride) and 5.00 g potassium iodide (KI) in 100 ml of water. 1 mL of each plant extract was treated with a few drops of Mayer's reagent. The presence of alkaloids had been demonstrated by the development of a yellowish or white precipitate.

Dragendorff 's test. In this test, Dragendorff reagent was employed. This is a potassium bismuth iodide solution composed of basic bismuth nitrate, potassium iodide and tartaric acid. When 1 mL of Dragendorff's reagent was applied individually to a total of 2 mL of each extract, an orange red ppt appeared, suggesting alkaloids presence.

Hager's test. Hagers reagent is picric acid saturated solution, which was prepared by adding 1g of picric acid in 100 ml od distilled water. A few drops of Hager's reagent were added to two millilitres of each hydromethanolic extract. The actual presence of alkaloids was shown by the development of a yellow precipitate.

Test for the detection of carbohydrates presence in hydromethanolic plant extracts of leaves of both the plants

Molish test. Alcoholic a-naphthol solution was added to 2 mL of each extracts for the molish test. Following that, only few drops of concentrated H_2SO_4 were put into the test tube's walls. A violet coloured ring built at the junction, suggesting the carbohydrates presence in the samples.

Benedict's test. Benedict's test- Few drops of Benedict's reagent were added in the hydromethanolic extracts of *T. officinale* and *U. ardens.* Heat was applied to the above mixtures for five minutes showing dark red precipitate which indicated carbohydrate contents in the specimens.

Test for the detection for flavonoids in hydromethanolic plant extracts

Alkaline reagent test. NaOH (2-3 drops) was added to two mililitres of hydromethanolic extract for flavonoids detection. Initially, an intense yellow colour developed, but after adding a dilute HCL (few drops), it gradually turned colourless, which indicates that flavonoids are present in the sample.

Shinod's test or Magnesium hydrochloride reduction test- To 1 mL of extract, ten drops of dilute HCL and a piece of magnesium had been added and the resultant rich pink to crimsoncolour indicated the presence of flavonoids.

Terpenoids detection in hydromethanolic plant extracts.

Salkowski test. Terpenoids were detected using the Salkowski technique. 5ml of each extract separately was combined with 2ml chloroform and 3 ml of concentrated sulphuric acid. A reddish brown colouring of the interface was generated to indicate the presence of terpenoids.

Test for detection of tannins in hydromethanolic plant extracts

Ferric chloride ($FeCl_3$) test. In this test 0.5 g of each hydromethanolic extract was completely dissolved in in water and then the solution was filtered. Then afterwards, 5% ferric chloride solution (few drops) were added to the filtrate solution. Results indicated precipitate formation which is greenish-black in colour which confirmed tanninsin the samples.

Test for phenols detection in hydromethanolic plant extracts. Hydromethanolic extract was mixed with water and few drops of $FeCl_3$ was added to it. The presence of phenols in the extracts was indicated by a dark green coloration.

RESUT AND DISCUSSION

Qualitative analysis of phytochemicals of hydromethanolic extract of leaves of *Taraxacum officinale* and *Urtica ardens.* The hydromethanolic extracts of *Taraxacum officinale* and *Urtica ardens* were analysed qualitatively using standard qualitative procedures. The qualitative analysis of phytocompounds is based on the colour or precipitation reactions and this depicts positive indicator to the presence of certain specific bioactive components. These colour or precipitation reactions can only determine the existence or non-existence of specific chemical groups, inspite of the quantity of those compounds in extracts. All the qualitative tests were performed according to the methods as described in material and method section above. The qualitative analysis of phytochemicals in plant extracts was done for presence of tannins, saponins, phenols, alkaloids , flavonoids, glycosides etc.

Carotenoids, flavonoids, phenolic acids, polysaccharides, sesquiterpene lactones, sterols, and triterpenes are the most common phytochemicals present in *Taraxacum officinale* (Amin Mir *et al*., 2013; Singh *et al*., 2008). Taheri *et al*. (2022) screened *Urtica* species globally for the presence of photochemical constituents such as sterols, triterpenes, coumarins, phenols, lignans, fatty acids etc.

The present study revealed that various phytoconstituents were present in hydromethanoic extracts of both the plants as mentioned in Table 1.

Detection for the presence of alkaloids in hydromethanolic plant extracts of leaves of both the plants. In both human medicine as well as in natural defence mechanism of organism alkaloids play a vital role and constitutes approximately twenty percents of secondary metabolites or phytochemicals of plants **(**Heinrich *et al*., 2021). Alkaloids are a kind of organic chemical substances with a variety of pharmacological actions. Natural chemicals derived from plants, such as alkaloids, have emerged to mitigate neurodegenerative diseaes and chronic inflammatory conditions (Aryal *et al*., 2022). Alkaloids account for around twenty percent of the reported secondary metabolites that are

found in plants. It defend plants from pests and govern their growth in plants. Alkaloids are particularly well-known therapeutically as cardioprotective agents as well as anti-inflammatory agents (Heinrich *et al*., 2021). Numerous studies have reported that alkaloids from traditional Chinese medicinal plants can decrease the level of Acute Kidney Injury or AKI biomarkers named as serum creatinine, KIM-1, BUN, and NGAL. Furthermore, their renal protective benefits may be associated with antioxidant actions, repair of damaged mitochondrial, decrease of cell apoptosis, autophagy recovery, and suppression of inflammatory response reduction (Rui *et al*., 2022). Alkaloids also have boosting effect on GSH, CAT, and SOD levels, which helps substantially in reversing the acute kidney injury (Fang *et al*., 2021).

Table 1: Qualitative analysis of phytochemicals of plant extracts.

Qualitative test	*Taraxacum officinale* F.G. Wigg extract	*Urtica ardens* Link extract
1. Tests for alkaloids		
a. Mayer's test	+	+
b. Dragendorff 's test	+	+
c. Hager's test	+	+
2. Tests for carbohydrates		
a. Molish test	+	+
b. Benedict's test	+	+
3. Tests for flavonoids		
a. Alkaline reagent test	+	+
b. Shinod's test	+	+
4. Test for terpenoids		
a. Salkowski test	+	+
5. Test for tannins		
a. Ferric Chloride test	+	+
6. Test for phenols	+	+

Mayer's test. The positive test for alkaloids had been demonstrated by the development of a yellowish or white precipitate. Both the plant extracts had shown the positive test for alkaloids detection.

Dragendorff 's test. Both the extracts had shown positive dragendorff's test by showing the presence of an orange red ppt, which indicates that alkaloid compounds are present in the test samples.

Hager's test. The actual presence of alkaloids was shown by the development of a yellow precipitate and both the hydromethanolic extract samples formed yellow precipitate in the end of the test.

Carbohydrates detection in hydromethanolic plant extracts of leaves of both the plants. Molish and Benedict's test were employed for detecting carbohydrates in the test sample. In Molish test and Benedict's test, the development of violet coloured ring at intersection and dark red precipitate suggests that carbohydrates are present in the samples respectively. Both the hydromethanolic extract test samples had given the positive tests for the carbohydrates

Flavonoids detection in hydromethanolic plant extracts. Plant flavonoids have demonstrated potential uses in pharmaceutical as well as in medical aspects such as antioxidant, antibacterial, cardioprotective, immune system boosting, anticancer, and anti-inflammatory activities (Tungmunnithum *et al*., 2018). Flavonoids significantly reduce cisplatin and methotrexatgenerted kidney damage, suggesting essential chemotherapeutic and renoprotective properties. Flavonoids have also been shown to have a favourable preventive impact against AKI caused by surgical procedures such as ischemic or reperfusion or cardiopulmonary bypass surgery (Vargas *et al*., 2018).

Both *T.officinale* and *U.ardens* extracts had suggested the presence of alkaloids by showing the positive colour response for both alkaline reagent test and Magnesium hydrochloride reduction test. In Alkaline reagent test an intense yellow colour developed, latterly by adding few drops of HCl (dilute), it gradually turned colourless, suggesting flavonoids presence in the test samples. While in Shinod's test or Magnesium hydrochloride reduction test the resultant rich pink to crimsoncolour indicated the presence of flavonoids.

Terpenoids presence in both hydromethanolic plant extracts. Salkowski test was employed for testing terpenoids presence in the sample, which can be interpreted by the development of reddish brown colour of the interface. Both the extracts had shown the development of reddish brown colour suggesting the presence of terpenoids in the samples.

Presence of tannins in hydromethanolic plant extracts. Both the extracts had shown positive response for Ferric chloride test by the development of a greenish black precipitate, which confirmed the presence of tannins.

Presence of phenols in hydromethanolic plant extracts. Polyphenols had shown to protect against mitochondrial damage in many experimental models of renal disease. The phenolic compounds have numerous therapeutic bioactivities such as antioxidant, anti-inflammatory, anticarcinogenic as well as antimutagenic etc **(**Huang *et al*., 2009). Polyphenols influence mitochondrial oxidative state, cell death, and several intercellular signalling cascades. It functions in the prevention or treatment of renal disease, as well as to investigate the molecular processes underlying their medicinal properties (Ashkar *et al*., 2022).

Positive results show the presence of phenols in the extracts by the development by a dark green coloration. Both the plant extract samples had shown the presence of phenols in the samples.

CONCLUSIONS

Plants are a unique source of bioactive compounds with biological activities and medicinal properties. The choice of solvents plays an important role in the extraction of bioactive chemicals. This study concluded that various phytochemicals such as alkalois, flavonoids, terpenoids, phenols, tannins are present in both the plants, which constitutes various pharmacological activities. Medicinal plant based alternative medicine has pronounced therapeutic effects against various ailments and has a potent potential to reverse the resistance towards synthetic drugs. The use of medicinal plants in empirical research and the development of new drugs is noteworthy. Therefore, *Taraxacum officinale* F.G. Wigg and *Urtica ardens* Link can be used as a futuristic alternative therapy against an array of ailments and can be used for development of novel drugs.

FUTURE SCOPE

This study can be further explored to know about the various pharmacological activities of phytocompounds of *Taraxacum officinale* and *Urtica ardens* and can be used to design novel therapeutics with these plant for use in various clinical diseases.

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Conflict of Interest. None.

REFERENCES

Alan, C., Kocoglu, H., Altıntas, R., Alıcı, B. and Ersay, A. R. (2011). Protective effect of decorin on acute ischaemia-reperfusion injury in the rat kidney. *Archives of Medical Sciences*, *7*(2), 211-216.

Aryal, B., Raut, B. K., Bhattarai, S., Bhandari, S., Tandan, P., Gyawali, K., Sharma, K., Ranabhat, D., Thapa, R., Aryal, D. and Ojha, A. (2022). Potential therapeutic applications of plant-derived alkaloids against inflammatory and neurodegenerative diseases. *Evidence-based complementary and alternative medicine*, *2022*.

Ashkar, F., Bhullar, K. S. and Wu, J. (2022). The effect of polyphenols on kidney disease: Targeting mitochondria. *Nutrients*, *14*(15), 3115

Badr, A., Fouad, D. and Attia, H. (2019). Insights into protective mechanisms of dandelion leaf extract against cisplatin-induced nephrotoxicity in rats: role of inhibitory effect on inflammatory and apoptotic pathways. *Dose-Response*, *17*(3), 1559325819874897.

Bakir Çilesizoğlu, N., Yalçin, E., Çavuşoğlu, K. and Sipahi Kuloğlu, S. (2022). Qualitative and quantitative phytochemical screening of *Nerium oleander* L. extracts associated with toxicity profile. *Scientific Reports*, *12*(1), 21421.

Chen, J., Wu, W., Zhang, M. and Chen, C. (2019). Taraxasterol suppresses inflammation in IL-1β-induced rheumatoid arthritis fibroblast-like synoviocytes and rheumatoid arthritis progression in mice. *International immunopharmacology*, *70*, 274-283.

Di Napoli, A. and Zucchetti, P. (2021). A comprehensive review of the benefits of *Taraxacum officinale* on human health. *Bulletin of the National Research Centre*, *45*(1), 1-7.

Fang, C. Y., Lou, D. Y., Zhou, L.Q., Wang, J. C., Yang, B., He, Q. J., Wang, J. J. and Weng, Q. J. (2021). Natural products: potential treatments for cisplatin-induced nephrotoxicity. *Acta Pharmacologica Sinica*, *42*(12), 1951-1969.

Haghju, S. and Almasi, H. (2015). Antioxidant, antibacterial and therapeutic properties of some endemic medicinal plants of Iran: A review. *Advances in Plants & Agriculture Research*, *2*(3), 146-153.

Heinrich, M., Mah, J. and Amirkia, V. (2021). Alkaloids used as medicines: Structural phytochemistry meets biodiversity—An update and forward look. *Molecules*, *26*(7), 1836.

Huang, W. Y., Cai, Y. Z. and Zhang, Y. (2009). Natural phenolic compounds from medicinal herbs and dietary plants: potential use for cancer prevention. *Nutrition and Cancer*, *62*(1), 1-20.

Jedrejek, D., Lis, B., Rolnik, A., Stochmal, A. and Olas, B. (2019). Comparative phytochemical, cytotoxicity, antioxidant and haemostatic studies of *Taraxacum officinale* root preparations. *Food and Chemical Toxicology*, *126*, 233-247.

Kamal, F. Z., Lefter, R., Mihai, C. T., Farah, H., Ciobica, A., Ali, A., Radu, I., Mavroudis, I. and Ech-Chahad, A. (2022). Chemical composition, antioxidant and antiproliferative activities of Taraxacum officinale essential oil. *Molecules*, *27*(19), 6477.

Lawson, S. K., Satyal, P. and Setzer, W. N. (2021). The volatile phytochemistry of seven native american aromatic medicinal plants. *Plants*, *10*(6), 1061.

Liang, Y., Duan, H., Zhang, P., Han, H., Gao, F., Li, Y. and Xu, Z. (2020). Extraction and isolation of the active ingredients of dandelion and its antifungal activity against Candida albicans. *Molecular Medicine Reports*, *21*(1), 229-239.

Mendoza, N. and Silva, E. M. E. (2018). Introduction to phytochemicals: secondary metabolites from plants with active principles for pharmacological importance. *Phytochemicals: Source of antioxidants and role in disease prevention*, *25*, 1-5.

Menke, K., Schwermer, M., Felenda, J., Beckmann, C., Stintzing, F., Schramm, A. and Zuzak, T. J. (2018). Taraxacum officinale extract shows antitumor effects on pediatric cancer cells and enhance mistletoe therapy. *Complementary therapies in medicine*, *40*, 158-164.

Mir, M. A., Sawhney, S. S. and Jassal, M. M. S. (2013). Qualitative and quantitative analysis of phytochemicals of Taraxacum officinale. *Wudpecker Journal of Pharmacy and Pharmocology*, *2*(1), 1-5.

Murtaza, I., Laila, O., Drabu, I., Ahmad, A., Charifi, W., Popescu, S. M. and Mansoor, S. (2022). nutritional profiling, phytochemical composition and antidiabetic potential of *Taraxacum officinale*, an underutilized herb. *Molecules*, *27*(17), 5380.

Roso, N. C., Correa, R. R. M., Castiglia, Y. M. M., Carvalho, L. R., Scatena, L. M., De Souza, A.V. G. and Vianna, P. T. G. (2012). Caffeic acid phenethyl ester effects in the kidney during ischemia and reperfusion in rats anesthetized with isoflurane. *Transplantation Proceedings*, *44*(5), 1211-1213.

Rui, Y., Li, S., Luan, F., Li, D., Liu, R. and Zeng, N. (2022). Several alkaloids in Chinese herbal medicine exert

protection in acute kidney injury: focus on mechanism and target analysis. *Oxidative Medicine and Cellular Longevity*, *2022*.

Sorescu, A. A., Nuta, A., Ion, R. M. and Iancu, L. (2018). Qualitative analysis of phytochemicals from sea buckthorn and gooseberry. *Phytochemicals-Source of Antioxidants and Role in Disease Prevention*, 161-177.

Serreli, G. and Deiana, M. (2019). In vivo formed metabolites of polyphenols and their biological efficacy. *Food & function*, *10*(11), 6999-7021.

Shresta, S., Bhattarai, B. R., Adhikari, B., Rayamajhee, B., Poudel, P., Khanal, S., Marasini, B. P., Aryal, B., Bhandari, S. and Parajuli, N. (2021). Evaluation of phytochemical, antioxidant and antibacterial activities of selected medicinal plants. *Nepal Journal of Biotechnology*, *9*(1), 50-62.

Singh, A., Malhotra, S. and Subban, R. (2008). Dandelion (Taraxacum officinale)-hepatoprotective herb with therapeutic potential. *Pharmacognosy Reviews*, *2*(3), 163.

Taheri, Y., Quispe, C., Herrera-Bravo, J., Sharifi-Rad, J., Ezzat, S. M., Merghany, R. M., Shaheen, S., Azmi, L., Prakash Mishra, A., Sener, B. and Kılıç, M. (2022). Urtica dioica-derived phytochemicals for pharmacological and therapeutic applications. *Evidence-based Complementary and Alternative Medicine*, *2022*.

Tungmunnithum, D., Thongboonyou, A., Pholboon, A. and Yangsabai, A. (2018). Flavonoids and other phenolic compounds from medicinal plants for pharmaceutical and medical aspects: An overview. *Medicines*, *5*(3), 93.

Vargas, F., Romecín, P., García-Guillén, A.I., Wangesteen, R., Vargas-Tendero, P., Paredes, M.D., Atucha, N.M. and García-Estañ, J. (2018). Flavonoids in kidney health and disease. *Frontiers in physiology*, *9*,394.

Wojcikowski, K., Johnson, D. W. and Gobe (2006). Herbs or natural substances as complementary therapies for chronic kidney disease: ideas for future studies. *Journal of Laboratory and Clinical Medicine*, *147*(4), 160-166.

Wu, J. (2021). Antibacterial activity of Taraxacum officinale against foodborne pathogens. *Pakistan Journal of Zoology*, *54*, 1-8.

Zare, M., Esmaeili, N., Paolacci, S. and Stejskal, V. (2023). Nettle (*Urtica dioica*) additive as a growth promoter and immune stimulator in fish. *Aquaculture Nutrition*.

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