

A REVIEW STUDY ON TRADITIONAL HERBAL MEDICINES OF BANGLADESH AGAINST DIFFERENT SKIN DISORDERS

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ABSTRACT

Traditional herbal medicines (THM) are used by almost 75%–80% of the people in Bangladesh to treat various types of skin diseases. This review includes ethnobotanical data as well as relevant scientific studies on plants used in traditional medicine in Bangladesh to treat various types of skin disorders like inflammatory skin disorders, viral infections, bacterial infections, fungal infections, parasitic infections, pigmentation disorders, skin cancers, trauma and other skin disease conditions. Using specified key phrases, information on the traditional herbal medicinal plants of Bangladesh that are effective against various skin ailments was collated from several electronic databases such as PubMed, Google Scholar, Web of Science, Scopus, ScienceDirect, Springer and others. A total of 45 relevant publications were investigated, providing complete information on 221 distinct herbal plant species belonging to 73 families utilised by the diverse peoples of Bangladesh for the treatment of skin problems. The most often utilised plant organ in this study was leaves, followed by roots, fruits, entire plants, barks, seeds, stems, rhizomes and flowers. The Asteraceae family has the most species, whereas in terms of plant habit, herbs have the most species. Azadirachta indica, Curcuma longa, Vitex negundo, Aegle marmelos, Allium sativum and Lawsonia inermis are the most commonly utilised species. This research might be used as a beginning point for a systematic search for natural herbal remedies to treat skin diseases in Bangladesh's flora.

Keywords: Traditional herbal medicines, Ethnobotanical, Skin disorders, Electronic databases

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INTRODUCTION

Skin is considered as the largest organ in the human body which protects our body from the entry of viruses and bacteria and also regulates the normal body temperature. Several conditions or factors like irritant substances, allergen particles, airborne microbes may affect our body skin which may result in itching, redness, swelling, burning etc. in the preliminary stage. But if this state continues for a long time, then several skin disorders may happen to the skin like inflammation of the skin, eczema, psoriasis, pruritus, skin ulcer, viral infections, bacterial infections, fungal infections, parasitic infections, pigmentation disorders, skin cancers, trauma etc. (Hay *et al.* 2015).

Skin disease is considered as the global problem which may relate to the problems in our physiological or psychological system or even sometimes in our social condition. (Zhang *et al.* 2019). There are several treatments for skin disorders like allopathic, herbal, Unani, Ayurvedic, etc. But for a long time, traditional herbal therapies have been used for the treatment of skin disorders due to its safe and cost effectiveness (Hoffmann *et al.* 2020). In practically every country in the world, the traditional healing system is considered as a vital and integral aspect of the healthcare system. Few studies have also looked at the overall picture of traditional healing techniques in Bangladesh, despite the fact that they serve around 80% of the country's sick (Haque *et al.* 2018). Most of the people particularly those who have been born in lower class families went to traditional healers first to seek help for their medical issues. They sought trained specialists for contemporary treatment only after such treatments had failed. They went back to the traditional healers if this failed. According to the World Health Organization (WHO), in developing countries a large number of the population, almost around 70%–95% depends on traditional medicinal plants for the purpose of preliminary healthcare treatment (Rahman *et al.* 2022).

However, in this study, an attempt has been made to investigate the traditional healing practices for skin disorders in rural areas of Bangladesh. Moreover, this study was designed in such a way, where one will find several traditional herbal medicinal plant lists for a particular skin disease which will provide the baseline information for further investigation of medicinal drugs for skin disorders. Therefore, it's our hope that our present study will draw the attention of the scientific community to explore a suitable herbal medicinal drug for a particular skin disease.

MATERIALS AND METHODS

Strategy Searching

Between 1 June 2021 and 1 December 2021, a comprehensive literature search, including ethnobotanical data, was conducted in the PubMed, Google Scholar, Web of Science, Scopus, ScienceDirect, Springer, according to the predetermined protocol (Rahman *et al.* 2022).

The literature searching function used terms like redness, swelling, burning, irritation, rashes, eczema, leucoderma, ringworm, wound, scabies, swelling, viral infections, bacterial infections, fungal infections, parasitic infections, pigmentation disorder, clogging or inflammation of the skin, medicinal plants, traditional plants, survey of medicinal plants, ethnobotanical survey, ethnomedicinal survey, and survey of plants acting on skin. With the help of regional and local floras, plant species were identified (Ahmed *et al.* 2008).

Selection of Study and Data Extraction

The literature search was completed by five reviewers, who then exported the publications that were found to be eligible. The literature was examined in order to achieve the desired result. A total of 45 relevant papers were being studied where 221 plant species from 73 families were being identified throughout the survey. For documentation, a total of 20 field visits were taken. From all possible sources published till the end of July 2020, all papers dealing with plant species useful against skin disorders have been found. The information was recorded on the documentation data sheet during the field interview. All plant species, biological forms, habitat, local names and uses were meticulously documented. Standard herbarium techniques were used to prepare plant specimens that included flowers and fruits (Alexiades and Sheldon 1996). Only English-language literature was considered for the search.

Data Synthesis and Analysis

All of the disagreements were resolved by the reviewers. The study's techniques were created with the sole objective of obtaining a valuable abundance of information about local people's use of traditional herbal medicine (THM) (Rahman and Khanom 2013). The major traditional herbal medicinal plants were categorised on the basis of their production in different zonal areas of Bangladesh. However, the data analysis was done on the basis of plant habits, plant parts, different families, number of plants used in different skin diseases, etc. All the specimens were identified using taxonomic books linked to the collection. Because there was a risk of duplicate publications, we utilised a cautious methodology to remove reports with a high likelihood of overlap.

RESULTS

Traditional Herbal Practices in Bangladesh

In practically all countries around the world, THM is a significant and frequently overlooked aspect of healthcare systems. It is, nevertheless, found in practically every country on the planet, and demand for such services is growing. THM of proven quality, safety and efficacy helps to achieve the goal of providing care to everyone (Haque *et al.* 2018). Traditional herbal methods are strongly founded in Bangladesh's cultural heritage and are ingrained in the people's culture. In one study it has been mentioned that although today allopathic treatment is highly advanced, after all almost 75 to 80% rural and some semi-urban populace in Bangladesh prefers THMs as their first choice (Akhtar, Akhtar and Rahman 2018). Since time immemorial, many sorts of traditional herbal methods have been used in this country as an important means of treating ailments and managing a variety of health issues. Traditional medical healing systems have taken on a special role in the care of individuals living in rural areas (Rupasinghe 2001). Magic, charms, incantations, religious passages, spiritual approaches, amulets, sacrifices, ceremonies and even intrusive physical and mental torment are all examples of traditional healing treatments. This treatment method is known as 'traditional' since it has been used for generations to treat a variety of physical and mental illnesses (Haque *et al.* 2014). However, traditional medicine based on locally available ingredients, cultural customs, and religious rites, as well as Ayurvedic and Unani systems based on scientific use of pharmacological procedures and technology, are among

Bangladesh's traditional healing practices. Because of the long tradition, supposedly good consequence, and their long-held conviction in its usefulness (Haque *et al.* 2014), the employment of these practitioners has significant relevance for local people.

THM for the Treatment of Different Categories of Skin Disorders

Skin disorders affect people of all ages, from newborns to the elderly, and can cause a number of issues (Marks, Miller and Lookingbill 2006). There are over a thousand skin disorders, but the majority of them fall into one of ten categories (Kasolang *et al.* 2020). In this study, we have categorised different skin disorders and their remedies from THM.

THM for inflammatory skin disorders

The innate immune system contains an inflammasome. It is an intracellular complex that binds microorganisms and sets in motion a signaling cascade that allows them to assault. Inflammatory skin disorders refer to a group of rashes and lesions that cause skin irritation and inflammation. These are prevalent chronic skin problems that affect people of all ages (Thind and Ormerod 2008). Inflammatory skin illnesses, on the other hand, are marked by the production of pro-inflammatory cytokines, which activates the innate and adaptive immune systems (Sá and Festa Neto 2016). Autoimmune disorders and autoinflammatory syndromes or diseases are the terms used to describe them. Autoantibodies are present in autoimmune inflammatory skin illnesses such as vitiligo and lupus erythematosus, which are caused by abnormal reactions to autoantigens regulated by β -cells and T-cells. In the absence of autoantigens and autoantibodies, autoinflammatory skin illnesses such as periodic fever syndromes and neutrophilic dermatoses entail activation of innate immune system cells (macrophages, neutrophils, mast cells and natural killer [NK] cells), resulting in tissue destruction. Autoimmune and autoinflammatory components are present in several skin illnesses, such as psoriasis (Sá and Festa Neto 2016). Inflammatory skin illnesses include allergy, acne, dermatitis, eczema, scar, skin lesions, skin wounds, skin rashes, psoriasis, sebaceous cysts, itching, redness, etc. Different THM against inflammatory skin disorders are being listed in Table 1.

THM for viral infections

A viral infection is the spread of a dangerous virus throughout your body. Viruses are unable to multiply without the help of a host. Viruses infect humans by inserting their genetic material into cells and hijacking the cell's internal mechanism to produce additional virus particles. When a virus is active, it generates copies of itself and bursts (kills) the host cell to release the freshly created virus particles. Virus particles may also 'bud' off the host cell over time before killing it. Although the skin is a popular site for viral infection symptoms, viruses are not considered part of the normal flora of the skin. The vast majority of viral skin infections are just temporary. Some viral infections, however, can leave scars on the skin if left untreated. The majority of skin rashes in children are caused by viruses. Chicken pox, herpes simplex virus (Type 1), herpes simplex virus (Type 2), HSV, measles and warts are only a few of the most prevalent viral skin infections (Ruocco *et al.* 2007). Different THM against viral infections are being listed in Table 2.

Table 1: List of Bangladeshi THM for skin inflammation.

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
1.	<i>Abelmoschus moschatus</i> (L.)	Amila	Malvaceae	Herb	Root, fruit	Itching	Animesh <i>et al.</i> (2010)
2.	<i>Achyranthes aspera</i>	Apang	Amaranthaceae	Herb	Root	Eczema	Goyal, Goyal and Mehta (2007)
3.	<i>Aegle marmelos</i>	Bel	Rutaceae	Tree	Leaf	Acne	Laphookhieo <i>et al.</i> (2011)
4.	<i>Allium cepa</i>	Peyaj	Liliaceae	Herb	Bulb	Reducing neo-angiogenesis in hypertrophic scars and keloids lesions	Maleš <i>et al.</i> (2019)
5.	<i>Allium sativum</i>	Roshun	Liliaceae	Herb	Bulb	Anti-inflammatory	Pazyar and Feily (2011)
6.	<i>Aloe inlica</i>	Ghritakumari	Liliaceae	Herbs	Leaf	Irritation, acne and eczema	Tabassum and Hamdani (2014)
7.	<i>Andrographis paniculata</i>	Kalomegh	Acanthaceae	Herb	Leaf	Itching	Tan <i>et al.</i> (2016)
8.	<i>Argemone mexicana</i>	Stalkata	Papaveraceae	Herb	Seed	Itching	Singh <i>et al.</i> (2010)
9.	<i>Argemone mexicana</i>	Shial kanta	Papaveraceae	Herb	Root extract	Skin diseases and inflammation	Brahmachari, Gorai and Roy (2013)
10.	<i>Aristolachia indica</i>	Isharmul	Aristolachiaceae	Herb	Leaf	Eczema	Sati <i>et al.</i> (2011)
11.	<i>Artocarpus heterophyllus</i>	Kathal	Moraceae	Tree	Leaf	Itching	Prakash <i>et al.</i> (2009)
12.	<i>Azadirachta indica</i>	Neem	Meliaceae	Tree	Leaf	Eczema	Benelli <i>et al.</i> (2017)
13.	<i>Blumea lacera</i>	Shial mutra	Asteraceae	Herb	Whole plant	Acne and eczema	Satyal <i>et al.</i> (2015)

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Table 1: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
14.	<i>Boerhavia diffusa</i>	Punarnava	Nyctaginaceae	Herb	Leaf	Itching and eczema	Nayak and Thirunavoukkarasu (2016)
15.	<i>Carica papaya</i> .	Papaya	Caricaceae	Shrub	Latex	Itching	Yogiraj et al. (2014)
16.	<i>Centella asiatica</i>	Thankuni	Apiaceae	Herb	Leaf	Eczema	Biswas et al. (2021)
17.	<i>Centella asiatica</i>	Thankuni	Apiaceae	Herb	Leaf	Preventing skin inflammation	Jamil, Nizami and Salam (2007)
18.	<i>Chromolaena odorata</i> (L.)	Uzaru	Asteraceae	Herb	Green leaves	Cut and wounds	Mukul, Uddin and Tito (2007)
19.	<i>Chenopodium ambrosioides</i>	Ban botua	Chenopodiaceae	Herb	Leaf	Leaf paste is taken externally for eczema	Al Faria, Alam and Rahman (2021)
20.	<i>Citrus limon</i>	Kagzi limboo	Rutaceae	Herb	Seed	Reduce inflammation	Otang and Afolayan (2016)
21.	<i>Curcuma aromatica</i>	Kasturi Manjal	Zingiberaceae	Herb	Flower	Acne, scars and inflammation	Umar et al. (2020)
22.	<i>Curcuma longa</i>	Holdi	Zingiberaceae	Herbs	Rhizome	Itching and eczema	Vaughn, Branum and Sivamani (2016)
23.	<i>Curcuma zedoaria</i>	Shati	Zingiberaceae	Herb	Whole plant	Paste for external application in inflammation and pain treatment	Al Faria, Alam and Rahman (2021)
24.	<i>Cuscuta reflexa</i> Roxb.	Swarna lota	Convolvulaceae	Herb	Stem	Skin infections	Patel et al. (2012)
25.	<i>Fumaria indica</i>	Bansapla	Fumariaceae	Herb	Whole plant	Whole plant recommended for skin allergy	Rao and Mishra (1998)

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Table 1: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
26.	<i>Heliotropium indicum</i>	Hatisur	Boraginaceae	Herb	leaf	Allergy and itching	Nawaz <i>et al.</i> (2009)
27.	<i>Justicia gendarussa</i>	Jagathmadan	Acanthaceae	Herb	Leaf	Itching	Sonal and Maitreyi (2011)
28.	<i>Lawsonia inermis</i>	Henna	Lythoideae	Tree	Bark	Eczema	Chaudhary, Goyal and Poonia (2010)
29.	<i>Mentha arvensis</i>	Pudina pata	Lamiaceae	Herb	Leaf	Itching and skin irritations	Akram <i>et al.</i> (2011)
30.	<i>Mikania scandens</i> (L.)	Assam lata	Asteraceae	Climber	Green leaves	Cut and wounds healing	Mukul, Uddin and Tito (2007)
31.	<i>Mimosa pudica</i>	Lozaboti	Leguminosae	Shrub	Leaf	Wounds healing	Kokane <i>et al.</i> (2009)
32.	<i>Nigella sativa</i> Linn.	Kalozira	Ranunculaceae	Herb	Flower	Treatment of inflamed skin	Gilani, Jabeen and Khan (2004)
33.	<i>Nymphaea nouchali</i>	Shapla	Nymphaeaceae	Herb	Flower	Skin infection	Alam <i>et al.</i> (2018)
34.	<i>Persicaria hydropiper</i>	Water pepper	Polygonaceae	Herb	Leaf	Juice of leaf for insects-bite treatment	Khatun, Imam and Rana (2015)
35.	<i>Persicaria hydropiper</i>	Panimarich	Polygonaceae	Herb	Leaf	Juice of leaf for insects-bite treatment	Hug, Jamal and Stanslas (2014)
36.	<i>Piper betel</i>	Pan	Piperaceae	Climber	Leaf	Juice of leaf for cut injury treatment	Rahman (2013)
37.	<i>Pterocarpus santalinus</i>	Rakta Chandan	Fabaceae	Tree	Wood	Anti-inflammatory	Walpola, Subasinghe and Yoon (2011)
38.	<i>Rosa damascena</i>	Rose	Rosaceae	Shrub	Flower	Acne, redness, inflammation, psoriasis, eczema and dermatitis	Osama <i>et al.</i> (2020)

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Table 1: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
39.	<i>Rumex maritimus</i> L.	Junglipalong	Polygonaceae	Herb	Root	For skin inflammation	Islam et al. (2018)
40.	<i>Senna alata</i>	Dadmardan	Fabaceae	Shrub	Leaf	Eczema	Oladeji et al. (2020)
41.	<i>Solanum hannemanii</i>	Kanta baegun	Solanaceae	Herb	Leaf	Acne and scabies	Zakaria and Haq (2017)
42.	<i>Solanum nigrum</i>	Kakmachi	Solanaceae	Herb	Leaf	Inflammation of skin	Sridhar and Naidu (2011)
43.	<i>Sonchus asper</i>	Banpalang	Asteraceae	Herb	leaves	Juice of leaf for external swellings	Al Faria, Alam and Rahman (2021)
44.	<i>Terminalia bellirica</i>	Bohera	Combretaceae	Tree	Fruit	Skin lesion	An et al. (2016); Kumar and Khurana (2018)
45.	<i>Vitex negundo</i>	Nishinda	Lamiales	Shrub	Leaf, seed and root	Antiseptic and anti-inflammatory	Vishwanathan and Basavaraju (2010)
46.	<i>Xanthium indicum</i>	Ghagra	Asteraceae	Herb	Whole plant	Insect-bite and snake-bite treatment	Kamboj and Saluja (2010)

Table 2: List of Bangladeshi THM for viral infections in skin.

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
1.	<i>Achyranthes aspera</i>	Abora	Amaranthaceae	Herb	Leaf	HSV-I and II	Bachar et al. (2021)
2.	<i>Allium sativum</i>	Rosun	Liliaceae	Bulb	Leaf	Anti-viral infections	Pazyar and Feily (2011)
3.	<i>Andrographis paniculata</i>	Green Chireta	Acanthaceae	Herb	Leaf	HSV-I	Bachar et al. (2021)
4.	<i>Argemone mexicana</i>	Shial kanta	Papaveraceae	Herb	Root	Skin warts	Al Faria, Alam and Rahman (2021)
5.	<i>Argemone mexicana</i>	Sialkata	Papaveraceae	Herb	Latex	Warts	Rahman and Keya (2015)
6.	<i>Asparagus racemosus</i>	Shatamuli	Asparagaceae	Climber	Leaf	Chicken pox	Khan and Rashid (2006)
7.	<i>Azadirachta indica</i>	Neem	Meliaceae	Tree	Fresh green leaf and seed	Skin diseases, chicken pox	Mukul, Uddin and Tito (2007)
8.	<i>Cardiospermum helicacabum</i>	Ketha boitta shag	Sapindaceae	Shrub	Whole plant	Chicken pox	Rahman (2010)
9.	<i>Cyperus rotundus</i>	Nutgrass	Cyperaceae	Herb	Rhizome	HSV-I	Bachar et al. (2021)
10.	<i>Heliotropium indicum</i>	Hatisur	Boraginaceae	Herb	Leaf	Chicken pox	Nawaz et al. (2009)
11.	<i>Hygrophila auriculata</i>	Kanta Alisa	Acanthaceae	Herb	Leaf	Chicken pox	Sajib and Uddin (2013)
12.	<i>H. difformis</i>	Alisa	Acanthaceae	Herb	Stem	Chicken pox	Sajib and Uddin (2013)
13.	<i>Mangifera indica</i>	Aam	Anacardiaceae	Tree	Fruit	HSV-I	Bachar et al. (2021)
14.	<i>Ocimum campechianum</i>	Lamiaceae	Lamiaceae	Herb	Leaf	HSV-I and II	Bachar et al. (2021)
15.	<i>Ocimum gratissimum</i>	Lamiaceae	Lamiaceae	Herb	Leaf	HSV-I and II	Bachar et al. (2021)
16.	<i>Ocimum tenuiflorum</i>	Lamiaceae	Lamiaceae	Herb	Aerial part	HSV-I and II	Bachar et al. (2021)

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Table 2: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
17.	<i>Rungia pectinata</i>	Pindi	Acanthaceae	Herb	Leaf	Juice of leaf is applied externally for smallpox	Al Faria, Alam and Rahman (2021)
18.	<i>Swertia angustifolia</i>	Chirayta	Gentianaceae	Herb	Whole plant	HSV-I	Bachar et al. (2021)
19.	<i>Tamarindus indica</i>	Tentul	Caesalpinaceae	Tree	Leaf	Chicken pox	Sajib and Uddin (2013)
20.	<i>Xanthium indicum</i>	Ghagra	Asteraceae	Herb	Whole plant	Paste is applied for smallpox	Kamboj and Saluja (2010)

THM for bacterial infections

A bacterial infection occurs when a hazardous strain of bacteria multiplies on or within the body. Bacteria have the ability to infect any part of the body. Pneumonia, meningitis and food poisoning are just a handful of the problems that dangerous bacteria may cause. Bacteria can be rod-shaped (bacilli), spherical (cocci) or helical (helical bacteria) (spirilla). Gram-positive and Gram-negative bacteria are two types of bacteria. Gram-positive bacteria have a thicker cell wall than Gram-negative bacteria. Gram staining, bacterial culture with antibiotic sensitivity determination and other techniques such as genetic analysis are used to identify bacterial strains and aid in the decision-making process. The 28th most prevalent diagnosis among hospitalised patients is bacterial skin infections. These infections are less difficult to treat than viral infections since medications are frequently successful. The most frequent bacterial skin infections encountered by family doctors are skin abscess, boils, leprosy, wound, cellulitis, impetigo and folliculitis (Elixhauser and Steiner 1999). Different THM against bacterial infections are being listed in Table 3.

THMs for fungal infections

Mycosis is the medical term for a fungus infection. Although most fungi are safe to humans, some of them can cause illness in certain circumstances. Fungi proliferate by producing spores, which can be breathed or taken up by direct touch. As a result, fungal infections are most commonly found on the skin, nails or lungs. Fungi can also infiltrate the skin, influence the organs and create a systemic illness throughout the body. Fungal infections are spreading at an alarming rate, posing a serious threat to healthcare providers. There are two different forms of fungal infections. Subcutaneous and superficial fungal infections affect the epidermis, keratinous tissues and mucous membranes. Systemic fungal infections, which can be caused by an opportunistic organism or in combination with a more invasive organism and are potentially lethal, are another type of fungal infection. The most prevalent microorganisms that cause fungal infection are candida and ringworms, scabies, dermatitis, tinea infection, etc. (Garber 2001). Different THMs against fungal infections are being listed in Table 4.

THMs for parasitic infections

A parasite is a creature that lives on or in its host and feeds on or at the cost of that host. A parasitic illness, often known as parasitosis, is an infection caused or spread by a parasite. Many parasites do not cause illnesses since they may cause both the organism and the host to die. Human parasites are parasitic organisms that infect humans. Parasitic illnesses may harm almost every living thing, including plants and mammals. Parasitic skin infections are an umbrella term for a range of infectious disorders in which parasite–host interactions are limited to the top layer of the skin. Parasitic skin diseases include scabies, capitis, corporis, pubis, taeniasis and hookworm-related cutaneous larva migrants (Feldmeier and Heukelbach 2009). Different THM against parasitic infections are being listed in Table 5.

Table 3: List of Bangladeshi THM for bacterial infections in skin.

No.	Botanical name	Local name	Family name	Life form	Parts used	Medicinal application	References
1.	<i>Aegle marmelos</i>	Bel	Rutaceae	Tree	Leaf	Young leaves juice is used for abscess	Rahman (2013)
2.	<i>Ageratum conyzoides</i>	Ochunti	Asteraceae	Herb	Leaf, stem	Boih leaves and stems pastes are used as skin disease, leprosy and wound	Kamboj and Saluja (2008)
3.	<i>Allium sativum</i>	Roshun	Liliaceae	Herb	Bulb	Anti-bacterial effect	Pazyar and Feily (2011)
4.	<i>Andrographis paniculata</i>	Kalomegh	Acanthaceae	Herb	Leaf	Leprosy	Al Faria, Alam and Rahman (2021)
5.	<i>Annona squamosa</i>	Ata	Annonaceae	Tree	Leaf	Leaf paste as abscess treatment	Pandey and Barve (2011)
6.	<i>Barleria prionitis</i>	Kanta Janti	Acanthaceae	Shrub	Leaf	Leaf paste is applied for leprosy	Al Faria, Alam and Rahman (2021)
7.	<i>Calotropis gigantea</i>	Akkan gach	Asclepiadaceae	Small Tree	Leaves extract	Whole plant for treatment of skin diseases, boils and sores	Dutta et al. (2021)
8.	<i>Cassia argusifolia</i>	Senna alexandrian	Legumionsae	shrub	Leaf	Plant extract slowed antimicrobial activity	Jaiwal and Middha (2017); Srivastava et al. (2006)
9.	<i>Celosia argentea</i>	Wheat celosia	Amaranthaceae	Herb	Leaf	Skin abscess	Usunomena and Samuel (2016)
10.	<i>Chrozophora rottileri</i>	Khudi okra	Euphorbiaceae	Herb	Whole plant	Plant for wound healing	Al Faria, Alam and Rahman (2021)

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Table 3: (continued)

No.	Botanical name	Local name	Family name	Life form	Parts used	Medicinal application	References
11.	<i>Coccinia grandis</i>	Telakucha	Cucurbitaceae	Climber	Whole plant	Paste of the whole plant is applied for leprosy	Bhattacharya, Singh and Ramrakhyani (2014); Ramchandran, Prasath and Anand (2014)
12.	<i>Croton bonplandianum</i> Bail	Bonjhal	Euphorbiaceae	Herb	Leaf	Leaf paste applied on wounds	Jeeshna, Paulisamy and Mallikadevi (2011)
13.	<i>Curcuma longa</i>	Holdi	Zingiberaceae	Herb	Rhizome	Paste made from rhizome is taken externally	Al Faria, Alam and Rahman (2021)
14.	<i>Cynodon dactylon</i> Pers.	Durbaghas	Poaceae	Herb	Whole plant	Pastes made from whole plants are used as skin disease, stop bleeding and wound	Al-Snafi (2019)
15.	<i>Dalbergia sissoo</i> Roxb.	Sissoo	Fabaceae	Tree	Wood	Wood paste for abscess treatment	Bhattacharya, Singh and Ramrakhyani (2014)
16.	<i>Eclipta alba</i>	Kalokeshi	Asteraceae	Herb	Leaf	Young leaf paste for wound and skin disease treatment	Jadhav <i>et al.</i> (2009)
17.	<i>Ethulia conyzoides</i>	Ethulia	Asteraceae	Herb	Leaf	Leaf paste applied as wound treatment	Okoro, Kadiri and Okoro (2017)
18.	<i>Ficus benghalensis</i>	Bot	Moraceae	Tree	Leaf	Leaf paste for abscess treatment	Gopukumar and Praseetha (2015)
19.	<i>Ficus benghalensis</i>	Bot	Moraceae	Tree	Leaf	Leaf paste for abscess treatment	Khatun and Rahman (2021)

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Table 3: (continued)

No.	Botanical name	Local name	Family name	Life form	Parts used	Medicinal application	References
20.	<i>Launaea asplenifolia</i>	Tikchana	Asteraceae	Herb	Leaf	Leaf paste is applied externally for wounds and skin disease	Al Faria, Alam and Rahman (2021)
21.	<i>Lawsonia inermis</i>	Mehendi	Lythraceae	Shrub	Leaf	Taken leaves paste is used as wound healing	Borade, Kale and Shete (2011)
22.	<i>Mimosa diplotricha</i>	Sadalajjabati	Fabaceae	Herb	Leaf	Wound healing	Jagetai, Lyngdoh and Lalramchhuana (2017); Ahmad et al. (2012)
23.	<i>Mimosa pudica</i>	Lozzaboti lota	Leguminosae	Shrub	Leaf	Antibacterial and antivenom effect	Kokane et al. (2009)
24.	<i>Oxalis corniculata</i>	Amrul	Oxalidaceae	Herb	Whole plant	Skin infection and healing wounds	Sisodia (2020); Srikanth, Swetha and Veeresh (2012)
25.	<i>Phoenix sylvestris</i>	Khejur	Areaceae	Tree	Spine	Spine extract is used for skin infection, wound	Jain et al. (2018)
26.	<i>Pouzolzia indica</i>	Pouzolzia	Urticaceae	Herb	Whole plant	Whole plant paste is applied externally for cuts and wounds	Al Faria, Alam and Rahman (2021)
27.	<i>Stephania japonica</i>	Akarnandi	Menispermaceae	Climber	Leaf	Leaf paste for abscess treatment	Hall and Chang (1997)
28.	<i>Syzygium cumini</i>	Jam	Myrtaceae	Tree	Bark	Bark paste is applied as wound healing	Ayyanar and Subash-Babu (2012)
29.	<i>Tagetes erecta</i>	Gadaphul	Asteraceae	Herb	Leaf	Juice of leaf is applied externally for cuts and wounds treatment	Al Faria, Alam and Rahman (2021)

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Table 3: (continued)

No.	Botanical name	Local name	Family name	Life form	Parts used	Medicinal application	References
30.	<i>Tagetes patula</i>	Genda	Asteraceae	Herb	Leaf	Juice of leaf is applied externally for cuts and wounds treatment	Al Faria, Alam and Rahman (2021)
31.	<i>Terminalia Chebula</i>	Haritoki	Combretaceae	Tree	Fruit	Skin aging and wound healing	Kannan, Ramadevi and Waheeta (2009); Swindell, Bojanowski and Chaudhuri (2020)
32.	<i>Tinospora cordifolia</i>	Guloncho	Menispermaceae	Climber	Whole plant	Used for bacterial skin infection	Sharma <i>et al.</i> (2019)
33.	<i>Vernonia patula</i>	Kuksim	Asteraceae	Herb	Flower	Flower paste for wound treatment	Lin and Wang (2002)
34.	<i>Xanthium indicum</i>	Ghagra	Asteraceae	Herb	Whole plant	Paste of whole plants for boils and abscess treatment	Kamboj and Saluja (2010)
35.	<i>Youngia japonica</i>	Youngia	Asteraceae	Herb	Leaf	Leaf paste for wound treatment	Yae <i>et al.</i> (2009)

Table 4: List of Bangladeshi THM for fungal infections in skin.

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
1.	<i>Abutilon indicum</i>	Pedipedika	Malvaceae	Herb	Leaf	To treat the infection of ringworm, applied thrice a day on the skin	Islam et al. (2018)
2.	<i>Acalypha indica</i>	Muktajhuri	Euphorbiaceae	Herb	Leaf	Skin infection such as scabies and dermatitis, and treatment for burns	Zahidin et al. (2017); Mohan et al. (2012)
3.	<i>Achyranthes aspera</i> .	Apamaranga	Amaranthaceae	Herb	Root	Root ashes are applied on the infected skin to reduce the pain with worms	Al Faria, Alam and Rahman (2021)
4.	<i>Artocarpus heterophyllu</i>	Kantha	Moraceae	Tree	Leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
5.	<i>Asparagus racemosus</i>	Shotomuli	Liliacea	Climber	Bark	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
6.	<i>Carica papaya</i>	Papay	Caricaceae	Tree	Whole plant, leaf and gum	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
7.	<i>Cassia alata</i>	Dard-mordo	Fabaceae	Shrub	Leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
8.	<i>Cassia tora</i>	Charakada	Fabaceae	Herb	Seed, leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)

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Table 4: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
9.	<i>Chenopodium ambrosioides</i>	Gobra bhang	Chenopodiaceae	Herb	Leaf, seed	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
10.	<i>Cocos nucifera</i>	Narikel	Arecaceae	Tree	Young leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
11.	<i>Curcuma aromatica</i>	Aam ada	Zingiberaceae	Herb	Tuber	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
12.	<i>Erythrina variegata</i>	Maandial gach	Fabaceae	Tree	Leaf and bark	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
13.	<i>Gynocardia odorata</i>	Chal moghra	Flacourtiaceae	Tree	Leaf, bark and seed	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
14.	<i>Heliotropium indicum</i>	Hatishur	Boraginaceae	Herb	Leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
15.	<i>Impatiens balsamina</i>	Dopati	Balsaminaceae	Herb	Leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
16.	<i>Ipomoea fistulosa</i>	Dhol kolmi	Convolvulaceae	Shrub	Leaf, bark and gum	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)

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Table 4: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
17.	<i>Juniperus chinensis</i>	Juniperus	Cupressaceae	Shrub	Whole plant	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarakhi and Rai (2013)
18.	<i>Justicia gendarussa</i>	Bish zara	Acanthaceae	Herb	Whole plant	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarakhi and Rai (2013)
19.	<i>Kalanchoe pinnata</i>	Pathorkuchi	Crassulaceae	Herb	Whole plant	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarakhi and Rai (2013)
20.	<i>Labiab purpureus</i>	Shim	Fabaceae	Climber	Lea	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarakhi and Rai (2013)
21.	<i>Lawsonia inermis</i>	Mehedi	Lythraceae	Shrub	Leaf, stem, bark	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarakhi and Rai (2013)
22.	<i>Mesua ferrea</i>	Nageshwar	Clusiaceae	Tree	Leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarakhi and Rai (2013)
23.	<i>Murraya koenigii</i>	Keri pata	Rutaceae	Shrub	Leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarakhi and Rai (2013)
24.	<i>Nyctanthes arbor-tristis</i>	Shefali	Verbenaceae	Tree	Leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarakhi and Rai (2013)
25.	<i>Persicaria hydropiper</i>	Water pepper	Polygonaceae	Herb	Leaf	Used in skin diseases such as ringworms	Khatun, Imam and Rana (2015)

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Table 4: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
26.	<i>Phyllanthus niruri</i>	Bhui amla	Euphorbiaceae	Tree	Whole plant	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
27.	<i>Piper betle</i>	Paan	Piperaceae	Herb	Leaf	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
28.	<i>Senna alata</i>	Daud gach	Fabaceae	Tree	Leaf	Ringworm skin infection	Hennebelle <i>et al.</i> (2009)
29.	<i>Sennaalata</i> (L.) Roxb.	Daudgach	Fabaceae	Shrub	Leaf	Ringworm skin infection	Zakaria and Haq (2017)
30.	<i>Senna occidentalis</i>	Barachal kasunda	Caesalpinaceae	Shrub	Leaf and root	Juice of leaf for ringworm infection	Al Faria, Alam and Rahman (2021)
31.	<i>Tabernaemontana divaricata</i>	Roma phool	Apocynaceae	Shrub	Seed	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
32.	<i>Terminalia belerica</i>	Bohera	Combretaceae	Tree	Leaf, bark and fruit	Tinea skin infection	Razzaghi-Abyaneh, Shams-Ghaifarokhi and Rai (2013)
33.	<i>Tinospora cordifolia</i> Miers.	Gulanha	Menispermaceae	Climber	Whole plant	Treatment of ringworm infections	Badole, Chaudhari and Zanwar (2013)
34.	<i>Vernonia patula</i>	Shialmutra	Asteraceae	Herb	Leaf	Juice of leaf is taken for ringworm infection	Al Faria, Alam and Rahman (2021)
35.	<i>Vetiveria zizanioides</i>	Binna gash	Poaceae	Shrub	Leaf	Leaf paste is taken externally for ringworm infection	Al Faria, Alam and Rahman (2021)

Table 5: List of Bangladeshi traditional herbal medicines for parasitic infections in skin.

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
1.	<i>Albizia procera</i> (Roxb.)	Koroi	Fabaceae	Tree	Bark	Applied boiled water with bark is used as scabies	Pachua, Lathlenmawia and Mazumder (2012)
2.	<i>Azadirachta indica</i> .	Neem	Meliaceae	Tree	Leaf	Scabies	Labu, Jahan and Rahman (2013)
3.	<i>Blumea lacera</i>	Shial mutra	Asteraceae	Herb	Whole plant	Used for skin scabies	Satyral et al. (2015)
4.	<i>Lawsonia inermis</i>	Mehedi	Lythraceae	Shrub	Leaf	Scabies	Zakaria and Haq (2017)
5.	<i>Lygodium flexuosum</i>	Dhekia	Lygodiaceae	Shrub	Root	Paste of root is taken externally for scabies.	Al Faria, Alam and Rahman (2021)
6.	<i>Persicaria hydropiper</i>	Water pepper	Polygonaceae	Herb	Leaf	Scabies	Khatur, Imam and Rana (2015)
7.	<i>Ranunculus scleratus</i>	Potica	Rununculaceae	Herb	Whole plant	Whole plant paste is taken externally for scabies	Al Faria, Alam and Rahman (2021)
8.	<i>Spilanthes calva</i>	Marhatatiga	Asteraceae	Herb	Leaf	Leaf juice is taken externally for scabies	Al Faria, Alam and Rahman (2021)
9.	<i>Tridax procumbens</i>	Tridhara	Asteraceae	Herb	Whole plant	Applied whole plant juice is used as scabies	Jude, Catherine and Ngozi (2009)
10.	<i>Typhonium trilobatum</i>	Ghet Kochu	Araceae	Herb	Corm	Paste of corm is applied externally for abscess	Al Faria, Alam and Rahman (2021)

THM for pigmentation disorders

A skin pigmentation issue is a medical ailment that alters the skin's colour. Melanin is the pigment that gives skin its colour. Melanocytes, which are specialised skin cells, produce it. Skin colour can be impacted when melanocytes are injured or unable to generate enough melanin. Depending on the etiology and course of the condition, a loss of pigment might affect a small portion of the body or the entire body. A variety of health conditions can induce skin pigmentation abnormalities. How much pigment is in the skin depends on the amount of melanin produced by the body. Pigment loss can be caused by a lack of melanocytes, defective cells, cold or chemical exposure, or certain infections (hypopigmentation). An increase in pigment can be caused by a variety of factors, including skin inflammation, hormonal changes, aging, a metabolic condition or any other underlying issue (hyperpigmentation). Age spots, freckles and melasma are all examples of hyperpigmentation. Vitiligo is a type of hypopigmentation. Hyperpigmentation can be caused by a variety of factors, including melasma, solar lentigines, post inflammatory hyperpigmentation and ephelides (Plensdorf and Martinez 2009). Different THM against pigmentation disorders are being listed in Table 6.

THM for skin cancers

Skin cancer is defined as the uncontrolled proliferation of aberrant cells in the epidermis, the outermost layer of the skin, as a result of uncorrected DNA damage that causes mutations. These mutations cause skin cells to grow quickly, resulting in cancerous tumors. Basal cell carcinoma (BCC), squamous cell carcinoma (SCC), melanoma and Merkel cell carcinoma (MCC) are the most common kinds of skin cancer. The sun's damaging ultraviolet (UV) radiation and the usage of UV tanning beds are the two primary causes of skin cancer. Skin cancer is less common among individuals of colour than in persons with light skin, despite the fact that it is associated with higher morbidity and mortality (Gloster Jr and Neal 2006). Skin cancer is fairly common, and the incidence rate is gradually rising. While nonmelanoma skin cancer (NMSC) death rates are declining, melanoma death rates are increasing. Both NMSC and melanoma are associated with a significant morbidity rate (Gloster and Brodland 1996). Different THM against skin cancer are being listed in Table 7.

THM for trauma

A catastrophic and life-altering physical damage to the skin or numerous layers of epithelial tissues is referred to as skin trauma. Cuts, burns, illness or other injuries are examples of this. The majority of skin trauma episodes result in mild injuries that are easily treated in an outpatient setting. The majority of skin trauma incidents result in minor injuries that can be treated effectively in an outpatient setting (Pearson and Wolford 2000). Trauma to the skin is defined as a blow, a cut or a burn to the skin. When the surface of the skin is injured, the body is more prone to infection and illness. Different THM against trauma are being listed in Table 8.

Table 6: List of Bangladeshi traditional herbal medicines for pigmentation disorders in skin.

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
1.	<i>Acacia catechu</i>	Kalakot	Mimosaceae	Tree	Bark	Skin hyperpigmentation	Anurukvorakun, Boonruang and Lahpun (2019)
2.	<i>Aloe barbadensis</i>	Aloe vera	Asphodelaceae	Herb	Leaf	Skin hyperpigmentation	Yagi, Kanbara and Morinobu (1987)
3.	<i>Azadirachta indica</i>	Neem	Meliaceae	Tree	Leaf and bark	Skin hyperpigmentation	Vaibhav and Lakshaman (2012)
4.	<i>Camellia sinensis</i>	Cha or Tea	Theaceae	Shrub	Leaf	Skin hyperpigmentation	Mukherjee et al. (2018); Moy and Levenson (2017)
5.	<i>Carica papaya</i>	Papaya	Caricaceae	Tree	Leaf	Skin hyperpigmentation	Rodrigo and Perera (2018)
6.	<i>Celosia argentea</i>	Silver cocks comb	Amaranthaceae	Shrub	Leaf	Skin hyperpigmentation	Usunomena and Samuel (2016)
7.	<i>Curcuma aromatica</i> Salsib	Ban Halud	Zingiberaceae	Herb	Leaf	Pigmentation	Tahsin (2019)
8.	<i>Curcuma longa</i>	<i>mura</i> and <i>chora</i>	Zingiberaceae	Tree	Root	Skin hyperpigmentation	Tanvir et al. (2017); Mukherjee et al. (2018)
9.	<i>Embllica officinalis</i>	Amlaki	Euphorbiaceae	Tree	Fruit	Skin hyperpigmentation	Hasan, Islam and Islam (2016); Dasaraju and Gottumukkala (2014)
10.	<i>Ficus carica</i>	Dumur	Moraceae	Shrub	Leaf	Improve skin colour by addressing an enzyme in skin (tyrosinase)	Dini et al. (2021)
11.	<i>Glycine max</i>	Soybean	Fabaceae	Tree	Seed	Skin hyperpigmentation	Mena, Mena and Tréton (2014)

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Table 6: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
12.	<i>Morus alba</i>	<i>mulberry</i>	Moraceae	Tree	Fruit	Skin hyperpigmentation	Fisk <i>et al.</i> (2014)
13.	<i>Muntingia calabura</i>	Jamaican Cherry	Muntingaceae	Shrub	Flower, leaf and fruit	Skin hyperpigmentation	Gupta, Gautam and Kumar (2014); Ragasa <i>et al.</i> (2015)
14.	<i>Nelumbo nucifera</i>	Poddo, Komol	Nelumbonaceae	Herbs	Flower	Skin hyperpigmentation	Paudel and Panth (2015)
15.	<i>Vitex negundo</i>	Nishinda	Verbenaceae	Shrub	Root	Skin hyperpigmentation	Malik <i>et al.</i> (2006); Chowdhury <i>et al.</i> (2011)

Table 7: List of Bangladeshi traditional herbal medicines for skin cancer.

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
1.	<i>Actinidia chinensis</i>	China gooseberry	Actinidiaceae	Climber	Whole plant	Anti-tumour activity	Labu, Jahan and Rahman (2013)
2.	<i>Allium sativum</i>	Rashun	Liliaceae	Bulb	Leaf	Skin cancer and anti-tumour activity	Pazyar and Feily (2011)
3.	<i>Aloe ferox</i>	Aloe vera	Liliaceae	Shrub	Whole plant	Anti-tumour activity	Labu, Jahan and Rahman (2013)
4.	<i>Astonia scholaris</i>	Chatim	Apocynaceae	Tree	Roots	Skin cancer	Rahman and Keya (2015)
5.	<i>Ananas comosus</i>	Ananas	Bromeliaceae	Herb	Dried fruit	Anti-tumour activity	Labu, Jahan and Rahman (2013)
6.	<i>Angelica sinensis</i>	Angelica	Umbelliferae	Herb	Whole plant	Anti-tumour activity	Labu, Jahan and Rahman (2013)

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Table 7: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
7.	<i>Annona</i> species	Monkey species	Annonaceae	Tree	leaf	Anti-tumour activity	Labu, Jahan and Rahman (2013)
8.	<i>Arctium lappa</i>	Burdock	Compositae	Herb	Whole plant		Labu, Jahan and Rahman (2013)
9.	<i>Argemone mexicana</i>	Sialkata	Papaveraceae	Herb	Latex	Skin cancer and tumour	Rahman and Keya (2015)
10.	<i>Betula utilis</i>	Bhojpatra	Betulaceae	Tree	Root	Anti-tumour activity	Labu, Jahan and Rahman (2013)
11.	<i>Blumealacera</i>	Shialmutra	Asteraceae	Herb	Whole plant	Skin tumour	Zakaria and Haq (2017)
12.	<i>Blumea lacera</i>	Shial mutra	Asteraceae	Herb	Whole plant	Skin tumour	Satyal et al. (2015)
13.	<i>Camellia sinensis</i>	Tea plant	Theaceae	Shrub	Leaf	Anti-tumour activity	Labu, Jahan and Rahman (2013)
14.	<i>Catharanthus roseus</i>	Vinca	Apocynaceae	Herb	Whole plant	Anti-tumour activity	Labu, Jahan and Rahman (2013)
15.	<i>Celosia argentea</i>	Silver cocks comb, wheat celosia	Amaranthaceae	Herb	Flower	Skin cancer	Usunomena and Samuel (2016)
16.	<i>Colchicum luteum</i>	Colchicum	Liliaceae	Herb	Whole plant	Anti-tumour activity	Labu, Jahan and Rahman (2013)
17.	<i>Curcuma longa</i> Linn	Holdi	Zinziberaceae	Herb	Rhysome	Anti-tumour activity	Labu, Jahan and Rahman (2013)
18.	<i>Echinacea angustifolia</i>	Black sampson	Asteraceae	Herb	Leaf	Anti-tumour activity	Labu, Jahan and Rahman (2013)

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Table 7: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
19.	Ginkgo biloba	Kew tree	Ginkgoaceae	Herb	Whole plant	Anti-tumour activity	Labu, Jahan and Rahman (2013)
20.	Glycine max	Soyabean	Leguminosae	Herb	Seed	Anti-tumour activity	Labu, Jahan and Rahman (2013)
21.	Glycyrrhiza glabra	Liquorice	Leguminosae	Herb	Rhysome	Anti-tumour activity	Labu, Jahan and Rahman (2013)
22.	Gossypium barbadense	Raw cotton	Malvaceae	Shrub	Seed	Anti-tumour activity	Labu, Jahan and Rahman (2013)
23.	Gyrophora esculenta	Mushroom	Umbellifariaceae	Herb	Leaf	Anti-tumour activity	Labu, Jahan and Rahman (2013)
24.	Linum usitatissimum	Flax seed	Linaceae	Herb	Seed	Anti-tumour activity	Labu, Jahan and Rahman (2013)
25.	Mentha species	Pudina	Labiataeae	Herb	Leaf	Anti-tumour activity	Labu, Jahan and Rahman (2013)
26.	Mimosa pudica	Lozzabati	Fabaceae	Shrub	Leaves	Anticancer treatment	Tahsin (2019)
27.	Panax ginseng	Ginseng	Aralaceae	Herb	Rhysome	Anti-tumour activity	Labu, Jahan and Rahman (2013)
28.	Solanum lycopersicum	Tomato	Solanaceae	Herb	Fruit	Skin cancer and cataracts	Tahsin (2019)
29.	Zingiber officinale	Ginger	Zingiberaceae	Herb	Rhysome	Anti-tumour activity	Labu, Jahan and Rahman (2013)

Table 8: List of Bangladeshi traditional herbal medicines for skin trauma.

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
1.	<i>Abrus precatorius</i>	Hongais	Fabaceae	Shrub	Seeds	Poisoning by spine of stringfish and in snake bite	Sajjib and Uddin (2013)
2.	<i>Aerva lanata</i>	Chaya	Amaranthaceae	Herb	Whole plant and flower	Wounds and injuries	Al Faria, Alam and Rahman (2021)
3.	<i>Alocasia macrorrhizos</i>	Mankachu	Araceae	Herb	Root	Paste for snake-bite treatment	Al Faria, Alam and Rahman (2021)
4.	<i>Amaranthus lividus</i>	Gobura notey	Amaranthaceae	Herb	Leaf and root	Boils and burns: decoction is taken externally	Al Faria, Alam and Rahman (2021)
5.	<i>Amaranthus viridis</i>	Gaikhura, Shaknotey	Amaranthaceae	Herb	Whole plant	Whole plant is used externally for burning sensation	Al Faria, Alam and Rahman (2021)
6.	<i>Coccinia grandis</i>	Telakucha	Cucurbitaceae	Climber	Whole plant	Whole plant paste is applied for cure of skin eruptions and burns	Ramachandran, Prasath and Anand (2014); Alqahitani, Ullah and Shahat (2022)
7.	<i>Eclipta alba</i>	Kalakeccha	Asteraceae	Herb	Leaf	Used as hair tonic	Sajjib and Uddin (2013)
8.	<i>Heliotropium indicum</i>	Hatisur	Boraginaceae	Herb	Root	Swelling of knees and joint pain	Shahnaj et al. (2015)
9.	<i>H. schizopetalus</i>	Orful	Malvaceae	Shrub	Flower	Hair tonic	Sajjib and Uddin (2013)
10.	<i>Hygrophila schulli</i>	Kulekharha	Acanthaceae	Herb	Leaf	Leaf paste is applied externally for rheumatism and pain	Al Faria, Alam and Rahman (2021)
11.	<i>Lawsonia inermis</i>	Mehendi	Lythraceae	Shrub	Leaf	Taken leaves paste is used for burning sensation	Borade, Kale and Shete (2011)

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Table 8: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
12.	<i>Mikania cordata</i>	Assamlata	Asteraceae	Climber	Leaf	Juice of leaf is applied as injury	Kiang, Sim and Yoong (1968)
13.	<i>Mimosa pudica</i>	Lajjaboti	Mimosaceae	Climber	Whole plant	Snake bites	Rahman and Keya (2015)
14.	<i>Piper betel</i>	Pan	Piperaceae	Climber	Leaf	Taken leaves juice is used as cut injury	Arambewela, Kumuratunga and Kalyani (2005)
15.	<i>Polygonum hydropiper</i>	Biskatali	Polygonaceae	Herb	Green leaf	Insect bites	Mukul, Uddin and Tito (2007)
16.	<i>Pouzolzia indica</i>	Pouzolzia	Urticaceae	Herb	Whole plant	Whole plant paste is taken externally in case of insect biting	Al Faria, Alam and Rahman (2021)
17.	<i>Senna occidentalis</i>	Barachal kasunda	Caesalpiniaceae	Shrub	Root	Root paste is taken externally for burning	Al Faria, Alam and Rahman (2021)
18.	<i>Tinospora cordifolia</i>	Guloncho	Menispermaceae	Climber	Whole plant	Fresh plant juice is used for burning sensation	Rahman (2013)
19.	<i>Trapa bispinosa</i> Roxb.	Paniphal	Trapaceae	Herb	Fruit	Fruits is taken externally for bleeding	Al Faria, Alam and Rahman (2021)
20.	<i>Typhonium trilobatum</i>	Chamghas	Araceae	Herb	Petiole	Poisonous insect bite	Rahman and Keya (2015)

THM for other skin disorders

Other skin problems include moles and birthmarks. Neither of these are health problems in and of themselves, but changes in moles should be examined for skin cancer indications. Wrinkles, rosacea, spider veins and varicose veins are just a few of the unclassifiable diseases. Wrinkles are caused by the breakdown of collagen and elastin in the dermis, resulting in sagging skin. Rosacea is a chronic skin illness that causes pimples, skin lesions and, in rare cases, nose growth. The cause has yet to be identified. Spider veins and varicose veins form when blood vessels enlarge and become visible through the skin's surface. Different THM against other skin disorders are being listed in Table 9.

Accumulation of traditional herbal plants and their distribution

A total of 221 plants from 73 different families were reported to be utilised to treat skin diseases. Table 1 lists all of the plant species that have been recorded, including their local name(s), family, chemical composition, life-form, plant part(s) used, traditional applications and any pharmacological data that supports their traditional usage. Herbs (57.47%), shrubs (18.09%), tree (16.74%), climbers (6.79%), bulb (0.90%) were among the described species life forms (Table 10). On the other hand, the most commonly used plant components were leaves (47.96%), whole plant (20.81%), root (7.24%), stem (1.81%), bark (4.07%), flower (4.52%), spine (0.45%), wood (0.45%), latex (1.35%), rhizome (1.815%), fruit (3.17%) and seed (4.52%) were the most commonly used plant components, while other parts were only used infrequently (Table 11). Because leaves contain significant concentrations of medicinal chemicals and are easy to harvest and prepare, they are frequently employed in herbal therapy.

Table 9: List of Bangladeshi THM for other skin disorders.

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
1.	<i>Achyranthes aspera</i>	Apang	Amaranthaceae	Herb	Leaf, seed and root	Skin disease: Leaf and stem paste is taken externally	Al Faria, Alam and Rahman (2021)
2.	<i>Aegle marmelos</i>	Bel	Rutaceae	Tree	Leaf	Leaf glue is used over the skin to get alleviation from tingles, two times every day	Jamal <i>et al.</i> (2017)
3.	<i>Ageratum conyzoides</i>	Ochunti	Asteraceae	Herb	Leaf, whole plant	Skin disease: Leaf and stem paste is taken externally	Al Faria, Alam and Rahman (2021)
4.	<i>Allium Sativum</i>	Rashun	Liliaceae	Bulb	Juice	Used as hair tonic	Sajib and Uddin (2013)
5.	<i>Alternanthera sessilis</i>	Sachi shak	Amaranthaceae	Herb	Whole plant and root	Whole plant paste is used in hair treatment	Al Faria, Alam and Rahman (2021)
6.	<i>Cassia angustifolia</i>	Senna alexandrian	Legumionsae	Shrub	Leaf	Inducing skin aging, moisturise and soften the skin by providing long lasting hydration	Srivastava <i>et al.</i> (2006)
7.	<i>Colocasia esculenta</i>	Kachu	Araceae	Herb	Whole plant and corm	Corn juice is taken externally for Alopecia	Al Faria, Alam and Rahman (2021)
8.	<i>Cuscuta reflexa</i>	Sarnalata	Cuscutaceae	Climber	Stem	Prevent hair fall	Rahman and Keya (2015)
9.	<i>Eclipta alba</i>	Kalokeshil	Asteraceae	Herb	Whole plant	Whole plant paste is taken externally for hair disease	Al Faria, Alam and Rahman (2021)
10.	<i>Euphorbia hirta</i>	Dhudiya	Euphorbiaceae	Shrub	Whole plant	Lip sore: Latex is applied externally	Al Faria, Alam and Rahman (2021)

(continued on next page)

Table 9: (continued)

No.	Botanical name	Local name	Family name	Life form	Part used	Medicinal application	References
11.	<i>Gnaphalium polycaulon</i> Pers.	Barakamra	Asteraceae	Shrub	Whole plant	Whole plant paste is taken externally for backbone pain	Al Faria, Alam and Rahman (2021)
12.	<i>Heliotropium indicum</i>	Hatisur	Boraginaceae	Herb	Leaf	Any types of skin disease	Zakaria and Haq (2017)
13.	<i>Lawsonia inermis</i> L.	Mehedi	Lythraceae	Shrub	Leaves	Used as hair tonic	Sajib and Uddin (2013)
14.	<i>Ludwigia perennis</i>	Kesordam	Onagraceae	Herb	Whole plant	Paste of whole plant is applied externally for headache	Al Faria, Alam and Rahman (2021)
15.	<i>Persicaria hydropiper</i>	Pani morich	Polygonaceae	Herb	Flower	The juice of flowers is taken externally for gout	Al Faria, Alam and Rahman (2021)
16.	<i>Persicaria nigrum</i>	Golmarich	Piperaceae	Shrub	Fruits	Hair tonic	Sajib and Uddin (2013)
17.	<i>Persicaria orientalis</i>	Boro panimorich	Polygonaceae	Herb	Leaves	Leaf juice is taken externally against lice bite	Al Faria, Alam and Rahman (2021)
18.	<i>Tridax procumbens</i>	Tridhara	Asteraceae	Herb	Leaf	Hair fall: Leaf paste is taken externally	Al Faria, Alam and Rahman (2021)
19.	<i>Uraria picta</i>	Shankar Jata	Fabaceae	Undershrub	Whole plant	Whole plant paste is taken externally for fracture	Al Faria, Alam and Rahman (2021)
20.	<i>Vitex negundo</i>	Nishinda	Verbenaceae	Shrub	Leaves	Hair tonic	Sajib and Uddin (2013)
21.	<i>Wedelia trilobata</i>	Keshraj	Asteraceae	Herb	Whole plant	Whole plant paste is taken for hair fall problem	Al Faria, Alam and Rahman (2021)
22.	<i>Wedelia chinensis</i>	Moha vringoraj	Asteraceae	Herb	Leaf	Leaf paste is taken for skin diseases, alopecia	Al Faria, Alam and Rahman (2021)

Table 10: Analysis of the data based on plant habits.

Habit	No. of species	%
Herbs	127	57.47
Shrubs	40	18.09
Tree	37	16.74
Climbers	15	6.79
Bulb	2	0.90

Table 11: Analysis of the data based on plant parts.

No.	Name of plant parts	Use of plant parts	%
1.	Leaf	106	47.96
2.	Whole Plant	46	20.81
3.	Root	16	7.24
4.	Stem	04	1.81
5.	Bark	09	4.07
6.	Flower	10	4.52
7.	Spine	01	0.45
8.	Wood	01	0.45
9.	Latex	03	1.35
10.	Rhizome	04	1.81
11.	Fruit	07	3.17
12.	Seed	10	4.52

Furthermore, as compared to studies involving other plant organs, there are more plant natural product studies accessible for leaves. Regarding botanical systematics, the families with the highest number of species used against skin disorders were the arecaceae, acanthaceae, actinidiaceae, amaranthaceae, anacardiaceae, annonaceae, apiaceae, apocynaceae, aristolochiaceae, araliaceae, asteraceae, asclepiadaceae, asparagaceae, asphodelaceae, balsaminaceae, betulaceae, boraginaceae, bromeliaceae, caricaceae, chenopodiaceae, caesalpiniaceae, clusiaceae, combretaceae, compositae, convolvulaceae, cucurbitaceae, cupressaceae, cyperaceae, euphorbiaceae, fabaceae, flacourtiaceae, fumariaceae, gentianaceae, ginkgoaceae, labiatae, lamiaceae, lamiales, leguminosae, liliaceae, linaceae, lythraceae, lythraceae, lygodiaceae, meliaceae, menispermaceae, moraceae, myrtaceae, meliaceae, malvaceae, menispermaceae, muntingaceae, mimosaceae, nymphaeaceae, nelumbonaceae, nyctaginaceae, oxalidaceae, piperaceae, polygonaceae, poaceae, papaveraceae, ranunculaceae, rosaceae, rutaceae, sapindaceae, solanaceae, theaceae, trapaceae, umbelliferae, umbilicariaceae, urticaceae, verbenaceae and zingiberaceae (Table 12).

Table 12: Analysis of the data based on different families.

No.	Family name	Number of species	%
1.	Arecaceae	4	1.81
2.	Acanthaceae	9	4.07
3.	Actinidiaceae	1	0.45
4.	Amaranthaceae	8	3.61
5.	Anacardiaceae	1	0.45
6.	Annonaceae	2	0.90
7.	Apiaceae	2	0.90
8.	Apocynaceae	3	1.35
9.	Aristolachiaceae	1	0.45
10.	Araliaceae	1	0.45
11.	Asteraceae	30	13.57
12.	Asclepiadaceae	2	0.90
13.	Asparagaceae	1	0.45
14.	Asphodelaceae	1	0.45
15.	Balsaminaceae	1	0.45
16.	Betulaceae	1	0.45
17.	Boraginaceae	5	2.26
18.	Bromeliaceae	1	0.45
19.	Caricaceae	3	1.35
20.	Chenopodiaceae	2	0.90
21.	Caesalpiniaceae	3	1.35
22.	Clusiaceae	1	0.45
23.	Combretaceae	2	0.90
24.	Compositae	1	0.45
25.	Convolvulaceae	2	0.90
26.	Cucurbitaceae	2	0.90
27.	Cupressaceae	1	0.45
28.	Cyperaceae	1	0.45
29.	Euphorbiaceae	6	2.71
30.	Fabaceae	16	7.24
31.	Flacourtiaceae	1	0.45
32.	Fumariaceae	1	0.45
33.	Gentianaceae	1	0.45
34.	Ginkgoaceae	1	0.45
35.	Labiataeae	1	0.45
36.	Lamiaceae	6	2.71
37.	Lamiales	1	0.45

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Table 12: (continued)

No.	Family name	Number of species	%
38.	Legumionsae	2	0.90
39.	Liliaceae	7	3.16
40.	Linaceae	1	0.45
41.	Lythraceae	1	0.45
42.	Lythroidae	1	0.45
43.	Lygodiaceae	1	0.45
44.	Meliaceae	1	0.45
45.	Menispermaceae	4	1.81
46.	Moraceae	6	2.71
47.	Myrtaceae	1	0.45
48.	Meliaceae	5	2.26
49.	Malvaceae	4	1.81
50.	Menispermaceae	4	1.81
51.	Muntingaceae	1	0.45
52.	Mimosaceae	2	0.90
53.	Nymphaeaceae	1	0.45
54.	Nelumbonaceae	1	0.45
55.	Nyctaginaceae	1	0.45
56.	Oxalidaceae	1	0.45
57.	Polygonaceae	8	3.62
58.	Piperaceae	4	1.81
59.	Polygonaceae	8	3.62
60.	Poaceae	2	0.90
61.	Papaveraceae	5	2.26
62.	Ranunculaceae	1	0.45
63.	Rosaceae	1	0.45
64.	Rutaceae	3	1.36
65.	Sapindaceae	1	0.45
66.	Solanaceae	3	1.36
67.	Theaceae	2	0.90
68.	Trapaceae	1	0.45
69.	Umbelliferae	1	0.45
70.	Umbilicariaceae	1	0.45
71.	Urticaceae	2	0.90
72.	Verbenacea	1	0.45
73.	Zingiberaceae	6	2.71

From the analysis of THM used against different skin diseases, we can see that the maximum plants, almost around 20.81% plants, are used for the treatment of inflammatory skin disorders. The percentage of plants used for other skin diseases are like, respectively, viral skin infection (9.04%), bacterial skin infection (16.29%), fungal skin infection (15.83%), parasitic skin infections (4.52%), skin pigmentation disorders (6.78%), skin cancer (13.12%), skin trauma (9.04%) and others skin disorders (10.40%) (Table 13).

Table 13: Data analysis based on plants used in different skin diseases.

No.	Name of skin diseases	Number of plants used	%
1.	Inflammatory skin disorders	46	20.81
2.	Viral skin infection	20	9.04
3.	Bacterial skin infection	36	16.29
4.	Fungal skin infection	35	15.83
5.	Parasitic skin infection	10	4.52
6.	Skin pigmentation disorders	15	6.78
7.	Skin cancer	29	13.12
8.	Skin trauma	20	9.04
9.	Others skin disorders	23	10.40

DISCUSSION

Traditional healing is holistic in nature, focusing on the individual's total health. It establishes a dynamic equilibrium between the body, the ego and society. Traditional healing methods are most commonly used in rural areas where access to biomedical health services is limited, but they have not lost their value in urban settings (Alonso 2015).

Traditional medicine research in Bangladesh has also been performed from a variety of angles. Some scholars have undertaken research in rural areas to learn about the religious, traditional, and cultural practices that are utilised to treat various ailments (Haque *et al.* 2014). The majority of previous studies concentrated on a single system of traditional healing techniques, such as a single case study, Unani and Ayurvedic systems, Kabiraji or Spiritual healing practices (Alonso 2015; Madamombe 2006; Kleinman 1980; Uddin, Islam and Romke 2010; Helman 2007; Kale 1995; Yamey 2002). Only a few research focused on the safety and efficacy of non-botanical traditional medicine.

The Government of Bangladesh acknowledged Unani and Ayurvedic systems of medicine as soon as the country gained independence, and the Board of Unani and Ayurvedic Systems of Medicine was established at the same time (Ghani 2013). The governments do not acknowledge any of the traditional healers. However, due to people's reliance on traditional healers, leaving them on the sidelines could have catastrophic consequences (Madamombe 2006).

In today's culture, selecting an herbal remedy is a difficult task. It is determined by a number of factors, including the severity of the disease, the patients' perception of disease risk, the healer's relative proximity, the cost of healthcare, transportation facilities, the patients' gender, the patients' attitude toward various healthcare systems, the patients' past experience, perception of illness and belief system about disease causes (Kleinman 1980; Uddin, Islam and Romke 2010; Helman 2007).

Cultivation Status of THM against Skin Diseases in Bangladesh

Traditional medicine has exploded in popularity in Bangladesh in recent years, alongside modern treatment. Since time immemorial, various varieties of THM have been employed in our nation as a crucial way of treating illnesses and managing various health concerns. Herbal medicine has seen exponential expansion in recent years, and these treatments are gaining appeal in both developing and developed nations due to their natural origins and lack of negative effects (Labu, Jahan and Rahman 2013).

The demand on natural forests in an overpopulated nation like Bangladesh is great; hence, the cultivation of medicinal plants may considerably help to improve the lives of underprivileged people by increasing biological variety. Despite increased acknowledgement of its value and economic and ecological potential, little study has been done on medicinal plants in Bangladesh, particularly on its cultivation importance and potential fields. Bangladesh has a diverse range of plant species due to its distinct biophysical context (Barua, Khan and Reza 2001). In our country, herbal medicine is used by 75% of the population for basic care. However, in Bangladesh, Rajshahi, Mymensingh, Tangail, Sylhet, Chandpur, Hill Tracts, Chittagong, Kushtia and Madhupur are some of the areas where some specific THM for skin ailments are abundantly grown (Figure 1).

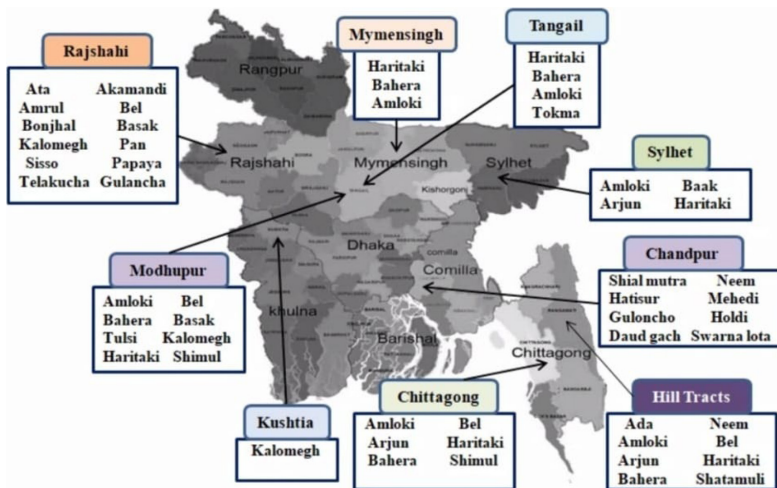


Figure 1: The major traditional herbal medicinal plants in different zonal area of Bangladesh supply chain of THM

Seed providers in the THM plant business acquire and store seed until it is time to sell it. Medicinal seed sales are a seasonal business, and growers buy seeds right before planting. Seedling farmers sell their seedlings seasonally from nurseries to a variety of local and international consumers, including local and international manufacturers, hawkers, *hakims*, *kabirazs* and pharmaceutical businesses.

Prices in the Texas Medicaid and Healthcare Partnership (THMP) industry are set by sellers or by an open negotiation technique, with no artificial pressure from any business group, government/non-government body, or other parties.

After primary and secondary processing, producers sell their green and dry goods. Primary processing entails selecting saleable product parts from plants, removing extraneous components from saleable parts, and washing saleable parts in pot water, while secondary processing entails cutting saleable product parts into tiny pieces and drying them in sunlight as needed.

Seeds are delivered to buyers by outside seed providers in two ways: personal visits to the research area and courier delivery through mobile contract. The plants are transported from the field to the processing facility using a motor operated van or head-loading. The manufacturers then sell the prepared goods in their homes or at local marketplaces.

Most of the time, seed vendors in the research region have no standard or grade for acquiring, selling, or keeping their seeds. Furthermore, wholesalers and retailers do not maintain any standards or grading in any step of product storage, packaging, shipping or sale. Processors often grade all sorts of goods in three ways: green, dry, and dust. Furthermore, rejected and low-quality green crops are processed into dry and dust goods.

Seeds need to be stored for a variety of reasons, ranging from 1 to 8 months. Seeds are stored in a variety of packaging materials, such as polythene bags, by the providers in both houses and businesses. They use neem leaves to keep pests at bay and to cover the exposed side. Basok, kalomegh, and tulsi are kept dry at farmers' homes for 1 week to 3 months in plastic bags within a bamboo container or in open form. Products are stored in open form on a polythene sheet or bamboo mat or directly on the floor.

Seed providers sell seeds in plastic bags. Small packages of kalomegh and Tulsi seeds are commonly used. Seedlings are frequently packaged in cartoon boxes when they are sold to outside purchasers. The items are again packaged in plastic and polythene bags for wholesale. For green and dry items, however, no package is usually provided. In retail sales, only tiny, thin polythene bags are provided for dust goods.

All of the players are unaware of market intelligence and sales marketing for their items. They get quality and pricing information from other THMP makers, local suppliers and wholesalers, hawkers, *farias*, *hakims* and *kabirazs* at home, the local market or tea shop refreshment gatherings (Figure 2) (Palash *et al.* 2021).

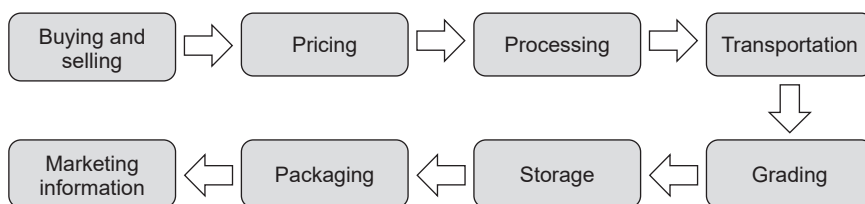


Figure 2: Supply chain of THM.

THM and Skin Diseases: Globally

The usage of THM is increasing all across the world. THM formulations, including single herb preparations, ethnic and contemporary THM formulations, are frequently utilised as adjuvant medicines or to promote consumer wellness (Enioutina *et al.* 2017). Regionally specific herbs and their applications arose from locally accessible plants and commerce in ethnobotanical treatments. Europe, the Middle East (Ghazanfar 1994), Africa, India (Behl and Srivastava 1993), China, Japan, Australia and the United States all established

regional herbal usage systems. Ayurvedic herbs in India (Kapoor 2018) and herb combinations created as part of traditional Chinese medicine (TCM) in China (Xu 2004) are two well-known systems that are still in use. Herbal usage has diminished in Europe and the United States as pure extracts and synthetic chemical medications have become accessible. Herbal medicines, particularly those for skin ailments, are becoming increasingly popular among patients and, to a lesser extent, with doctors. Herbal remedies that have been utilised for generations in Asia, particularly China and India, are now being investigated scientifically. Herbal medicines and their indicated uses are overseen by the German regulatory authority Commission E (Klein, Rister and Riggins 1998). Currently, herbal items are only regulated as dietary supplements in the United States. Active substances, purity and concentration are not standardised. There are also no restrictions on which herbs can be sold for certain purposes. Herbal treatment originated as folk medicine in Western medicine. It started in the United States during the colonial period, when women at home utilised homegrown botanicals (Tsen *et al.* 2000).

THM and Skin Diseases in Bangladesh

Skin illnesses are common in the general population of developing nations, according to the World Health Organization (WHO), with some diseases being especially frequent in youngsters. According to the WHO, the most common skin problems in children include pyoderma, tinea capitis, scabies, viral skin disorders, pediculosis capitis, dermatitis and insect bite responses (World Health Organization 2005). Aside from skin disorders caused by arsenic-contaminated food and water, skin ailments are frequent among Bangladesh's rural and urban slum populations due to a lack of sufficient toilet facilities and unsanitary living circumstances. Eczema, fungal infections, scabies and pyodermas are the most frequent skin illnesses, according to a survey of patients at Faridpur Medical College Hospital in Bangladesh (Sarkar *et al.* 2010). People in Bangladesh have been using herbal remedies, often known as alternative, complementary or traditional therapies, since ancient times. This is still the case today, despite the advent of allopathic treatments. These are the result of a multitude of things. For starters, traditional herbal treatments have been used for hundreds of years and have shown to be effective. Second, many individuals in the nation lack access to contemporary doctors or are unable to pay for doctor's fees or the cost of allopathic drugs. Third, many allopathic drugs have negative side effects. Fourth, Bangladesh's hill tracts are made up of three districts: Bandarban, Khagrachari and Rangamati, and are located in the country's south-east corner, with the Kaptai watershed region lying between 21°25' and 23°45' N and 91°45' and 92°52' E. A large number of tribal populations belonging to 14 major tribes, namely the Chakma, Marma, Murong, Tanchunga, Tripura, Chack, Bhome, Pangkhao, Kheyang, Rheyang, Rakhain, Lushai, Kuki and Khumi, live as forest dwellers in remote areas throughout the hill tracts where education and modern medical systems of healthcare are absent or poorly implemented (Rahman 1999). Elderly men and women, particularly traditional herbalists known as Baiddaya, were known to have extensive knowledge of the usage of plants as sources of medicine. Due to the growth of modern health care systems in mountainous areas, this precious indigenous knowledge is vanishing day by day (Rahman 1997). Eczema, scabies, septic abscess, fungal/bacterial infection, boils, wounds and skin allergy are among the most frequent skin illnesses among the Chakma, Marma and Tanchunga tribes, according to ethnobotanical research. *Baiddaya* or old ladies administer herbal medicines to more than 70% of them. All of the aforementioned considerations have resulted in the usage of plant-based medicine in the treatment of skin disorders in this nation even today.

CONCLUSION

The findings of this study are the first to document the use of THM in the treatment of various skin ailments in several districts of Bangladesh using modern research techniques. A total of 221 plant species belonging to 73 families have been identified as being utilised to cure various skin ailments. It may be stated that the tribal people of the studied region possess extensive knowledge of therapeutic plants. However, in a rural location, medicinal plant knowledge is limited to a few people. As a result, there is an urgent need to safeguard traditional knowledge in this field, particularly in relation to the use of medicinal herbs.

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