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Full Length Research Paper

Arthritis database: A composite web interface for anti-arthritic plants

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A number of plants have been described in Ayurveda and other traditional medicine for the management of Arthritis. However, information about them is not easily available. We developed a database to maintain the record of medicinal plants having anti-arthritic activity. The database contains information such as plant name, botanical name, useful plant parts, its geographical distribution, taxonomy, clinical/experimental data as well as its other uses. All records in database are accessed alphabetically. The current database contains 112 plants species records. The database also contains general information about Arthritis such as its types, sign and symptoms, prevention and treatment.

Key words: Arthritis, database, medicinal plants.

INTRODUCTION

Arthritis represents one of the most prevalent chronic health problems and is a leading cause of disability (Ashburn, 2002). Arthritis affected 43 million U.S. adults in 2002 (Bolen et al., 2005) and is the leading cause of disability in the United States (McNeil and Binette, 2001). By the year 2020, this number is expected to reach 60 million. Three of 10 working age adults with arthritis report some arthritis-attributable work limitation (Bolen et al., 2005). Arthritis is the inflammation of a joint, which osteoarthritis) to those associated with inflammation resulting from an overactive immune system (such as rheumatoid arthritis). The most common form of arthritis is osteoarthritis. Osteoarthritis is a degenerative disease characterized by damage to the articular cartilage, changes in subchondral and marginal bone, synovitis and capsular thickening, typically affecting weight bearing can include infiltration of inflammatory cells (monocytes), synovial hyperplasia, bone erosion and new bone formation, narrowing of the joint space and ankylosis of the joint (Bendele et al., 1999). There are many types of arthritis (over 100 and growing). The types range from those related to wear and tear of cartilage (such as joints (knee and hips) (Kidd, 2006). Pain in osteoarthritis is localized and use-related, occurring during movement or weight bearing (Bendele, 2001; Fernihough et al., 2004). Rheumatoid arthritis is an autoimmune disease of the synovium that leads to an inflammatory poly-arthritis. It is characterized by the symmetrical pattern of affected joints and by morning stiffness, joint swelling and tenderness. Pain in rheumatoid arthritis improves with movement (Bendele, 2001; Levine et al., 1987).

Gout represents one of the most painful forms of arthritis. A metabolic disorder with high blood levels of uric acid (hyperuricemia), gout is characterized by recurrent episodes of acute arthritis resulting from deposits of needle-like crystals of uric acid in the joints. The metatarsophalangeal joint (big toe) is typically affected, but other joints can be involved as well, including the knee (Ventura-Martinez et al., 2004; Meiner, 2001). Ayurveda and other traditional medicinal system

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Abbreviations: HTML, hyper text markup language; **OS,** operating system; **GB,** giga byte; **RAM,** random access memory.

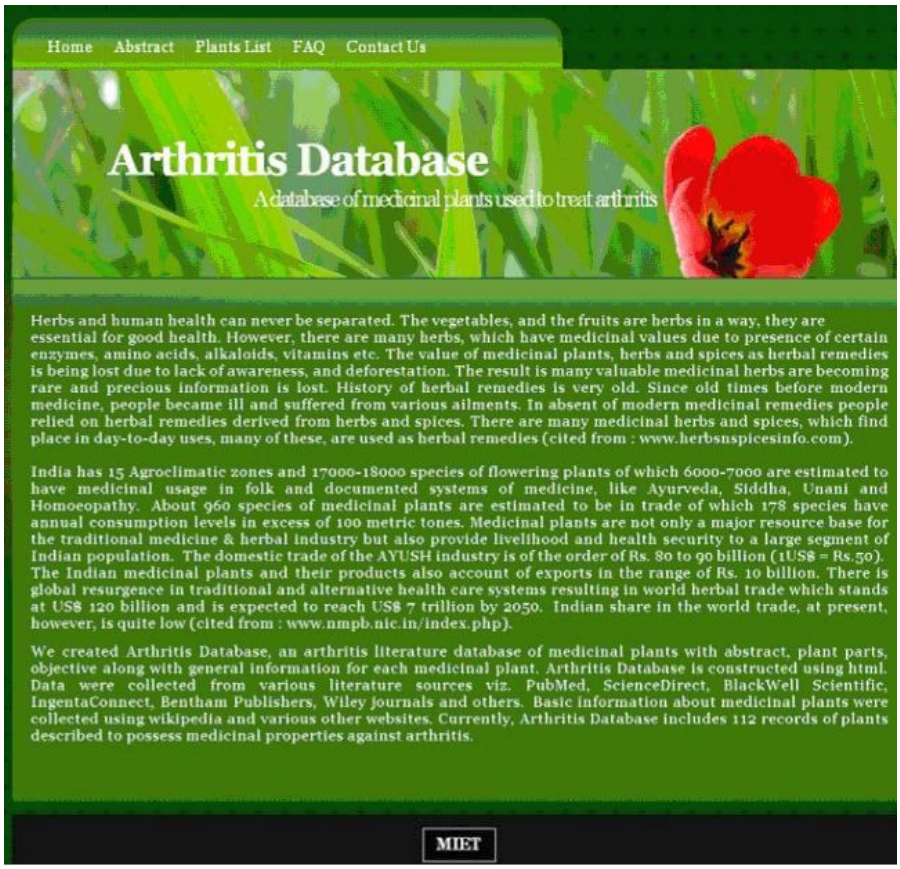

Figure 1. A screen shot of the arthritis database home page.

for the treatment of arthritis describe a number of plants used as herbal drugs. Hence, they play an important role as alternative medicine due to less side effects and low cost.

Turmeric has been used for centuries in Ayurvedic medicine as a treatment for inflammatory disorders including arthritis (Janet et al., 2006). Beside turmeric Ginger (*Zinziber officinalis*, Zinziberacea) has been used as an anti-inflammatory agent Indian ayurvedic and traditional medicine system. Harshingar (*Nyctanthes arbor tristis* L.) has been used widely as a decoction for the treatment of arthritis and sciatica since centuries (Rathore et al., 2007). *Trewia polycarpa* Benth (Euphorbiaceae) roots are also used for the treatment of rheumatism, arthritis and gastritis (Tao et al., 1989). Bromelain, an extract of pineapple stem, has been reported to possess anti-inflammatory property. Active components of bromelain are peroxidase, acid phosphatase and several protease inhibitors. When bromelain was tried with RA patients, 72% of total patients reported reduced swelling and pain (Cohen and Goldman, 1964). Ayurvedic preparations in spite of their established efficacy for the treatment of Arthritis are not very popular due to lack of systematic information about the given plant, parts used, their mechanism of action, side effects, clinical or experimental data etc. Thus, there is a need to document such information in the form of a database.

Here, we describe a database containing information for anti-arthritic plants and their uses. The database describes medicinal plants having anti- arthritic activity with other related information including relevant references (http://www.mietedu.org/index1.html). No such database is available freely for anti-arthritic plants.

METHODOLOGY

Data collection

Basic information about arthritis plants were collected using Google, Wikipedia, etc. Data of arthritis plants on clinical/experimental trials were collected from literature sources such as PubMed, Science Direct, Biomed Central, Springerlink, Wiley journals, Journals of Phyto-medicine, Journal of Ethnobiology and Ethnomedicine and through collection of folklore medicinal usage.

Database design

The database was constructed using standard HTML. It has a web-based, flat-file type user interface and is represented in table format. The screenshot of the database are shown in Figures 1, 2 and 3.

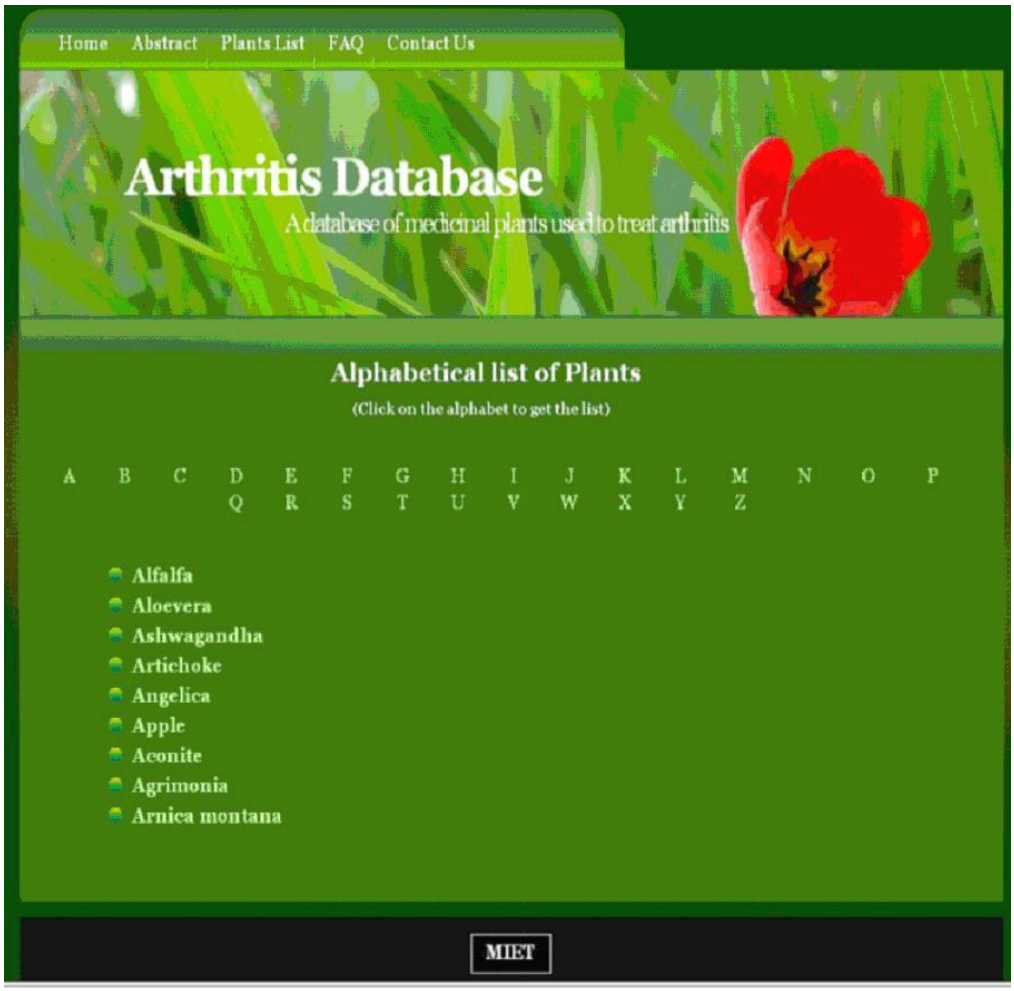

Figure 2. A screen shot of the arthritis database plant list page.

Software

Microsoft Windows XP operating system was used in the development. HTML was used for the creation of web pages and development of database front end. The database is best viewed at a resolution of 1152 X 864 using Internet explorer as default web browser.

Hardware

Personal computer with high-speed processor, Microsoft Windows XP OS having a RAM of 1 GB and hard disc capacity of 320 GB was used.

RESULTS AND DISCUSSION

Database features

The record entry contains basic information about the plant as well as trade name of plant, botanical name, part used, habitat, taxonomy, reference and miscellaneous. The information about plants can be retrieved alphabetically by clicking on the alphabets. The database also contains general information about Arthritis such as its types, sign and symptoms, prevention and treatment.

Utility

This freely available web database provides supplementary and useful information about anti-arthritic plants capable of controlling Arthritis. The database also contains clinical or experimental trials data with source of plant raw material for potential use as therapeutic material. The database is also useful for the scientific community and industries for a quick and informative review on anti-arthritic plants.

Future development

We plan to further refine and update this database and

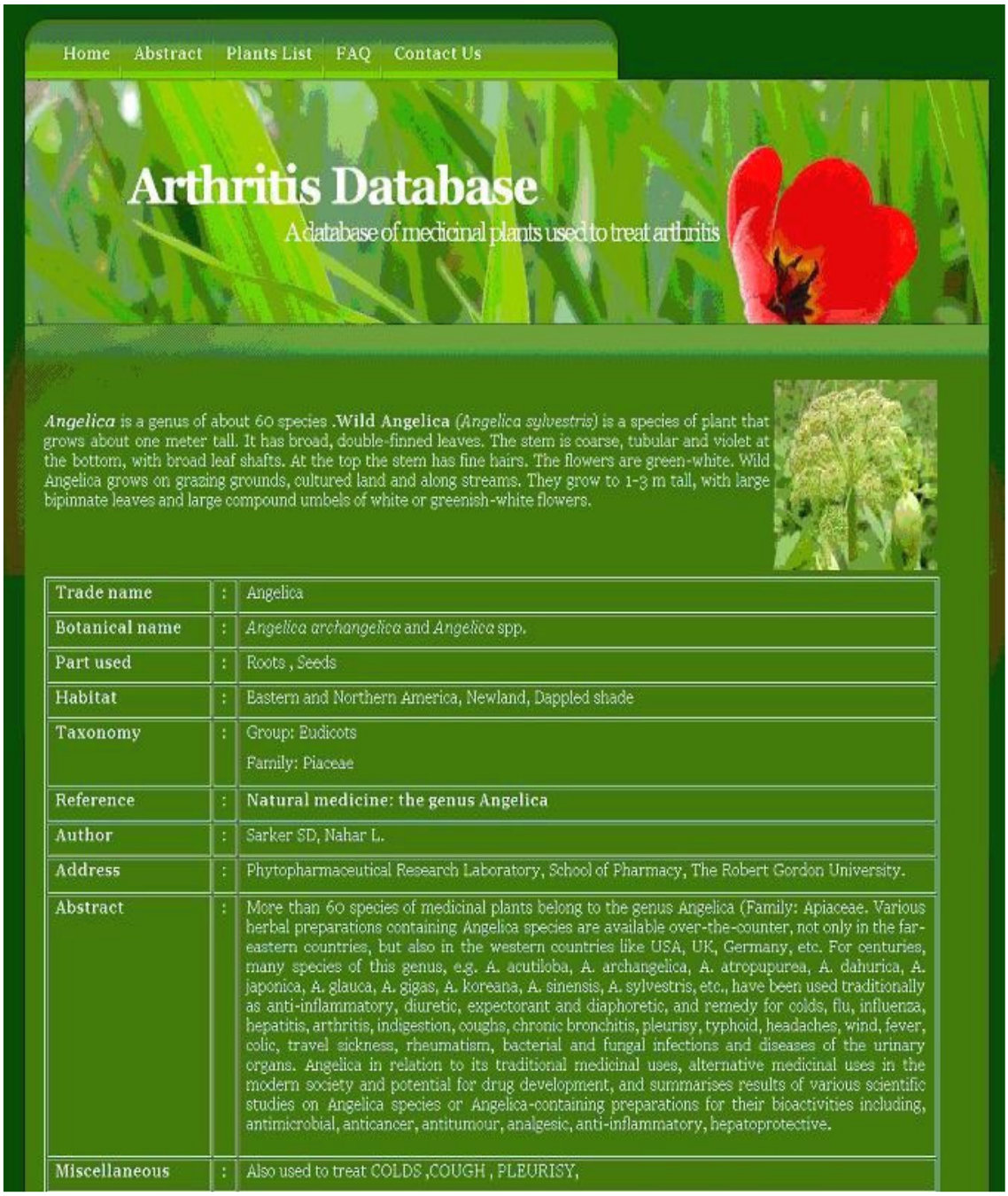

Figure 3. A screen shot of the arthritis database individual record page.

adding more plants to database as well as links to known drugs related data in the near future.

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