Bioinformation by Biomedical Informatics Publishing Group *open access*

www.bioinformation.net **Web Database**

A database for medicinal plants used in treatment of asthma

Balaji Kasirajan[1], Rajadurai Maruthamuthu[1], Vidhya Gopalakrishnan[1], Krithika Arumugam[1], Hudson Asirvatham[1], Vidya Murali[1], Ramya Mohandass[1], Anusha Bhaskar[1,*]

[1]PG Department of Biotechnology and Bioinformatics, Bishop Heber College, Vyalur Road, Tiruchirappalli 620 017;
Anusha Bhaskar* - E-mail: anushaparthiban@gmail.com; * Corresponding author

received September 25, 2007; revised October 22, 2007; accepted November 12, 2007; published online December 05, 2007

Abstract:
The knowledge of most plants used in the treatment of asthma, the plant part which is effective in treatment is confined to very few persons who are engaged in folklore medicine. However, this form of medicine is not very popular. Therefore, it is of considerable interest to ethno-botanical community to understand the plants and the parts used for treatment. Here, we describe AsthmaPlantBase, a database containing information of medicinal plants for treatment of asthma.

Availability: http://www.asthmaplants.com

Keywords: asthmaplants; medicinal; database; phytochemical; active principles

Background:
Among several respiratory diseases affecting man, bronchial asthma is the most common disabling syndrome, nearly 7 to 10 percent of the world population suffer from bronchial asthma **[1]**, which is a chronic illness involving the respiratory system in which the airway occasionally constricts, becomes inflamed, and is lined with excessive amounts of mucus, often in response to one or more triggers. These episodes may be triggered by such things as exposure to an environmental stimulant (or allergen), cold air, warm air, moist air, exercise or exertion, or emotional stress. In children, the most common triggers are viral illnesses such as those that cause the common cold. **[2]** A variety of exogenous determinants of asthma were also been, some of which are air pollution, tobacco smoking, diet, occupation and respiratory infection, these pollutants may serve as inciters or triggers of asthmatic reaction in airways that are already hyperresponsive, they may exert direct toxic influence on the respiratory epithelium or may augment or modify immune responses to inhaled antigens. **[3]** During an asthma episode, inflamed airways react to environmental triggers such as smoke, dust, or pollen. The airways narrow and produce excess mucus, making it difficult to breathe. In essence, asthma is the result of an immune response in the bronchial airways. **[4]** As according to the World Health Organization **[5]** over 80% of the people in developing countries depend upon traditional medicine for their primary health care. **[6]** Medicinal plants are considered as source of various alkaloids and other chemical substances essential for mankind. **[7]** The study of medicinal plants is being revived again. Although they have been used for millennia by tribal and ethnic communities throughout the world, only in recent years medicinal plants have attracted global interest as they constitute a rich treasure trove of cultural information and are sources of natural products, which provide health security to millions in rural communities. **[8]** In recent years there has been renewed interest in natural medicines that are obtained from plant parts or plant extracts. Nearly 40 percent or more of the pharmaceuticals currently used in western countries are derived or at least partially derived from natural sources. **[9]** Standard bronchodilator drugs are available, and the relief offered by them is mainly symptomatic and short lived. Moreover, the side effects of these drugs are also quite disturbing. Hence, there is a quest for effective and safe remedy for bronchial asthma. In recent years there is a global trend for revival of interest in the traditional system of medicine. Screening of medicinal herbs has become a potential source of biodynamic compounds of therapeutic value in phytochemical research. Hence we created AsthmaPlantBase, an asthma e-literature database of medicinal plants with taxonomical position, abstract, plant parts used, references, other medicinal uses etc.,

Methodology:
Construction of AsthmaPlantBase
Data of plants used in the treatment of asthma were collected from various literature sources such as Pubmed **[10]**, ScienceDirect **[11]**, Blackwell Synergy **[12]** Scirus **[13]** IngentaConnect **[14]**, Springerlink **[15]**, Biomed Central **[16]** and from use in folklore medicine. The database includes 40 genus and 50 species of plants having effect in the treatment of asthma. The list however, is not complete. The data is provided in alphabetical order and the

records are organized to simplify the task of finding relevant data of any plant. The database can be accessed alphabetically either using genus name or vernacular name for detailed information of the plant.

Database design

The database is developed using MYSQL as back-end and ASP.net and PHP as front-end on Multiple platform and updated regularly. Each entry in AsthmaPlantBase is provided with a unique accession number AXX01.03, where, A denotes asthma, XX denotes genus and species names, 01 represents the alphabetical position, 03 is the entry record.

The entry of plants listed in the database contain information such as plant name (Scientific and common), part investigated, active components attributing the medicinal property. The "Article link" provides few free text articles for further reading. A screen shot of the database is given in figure 1.

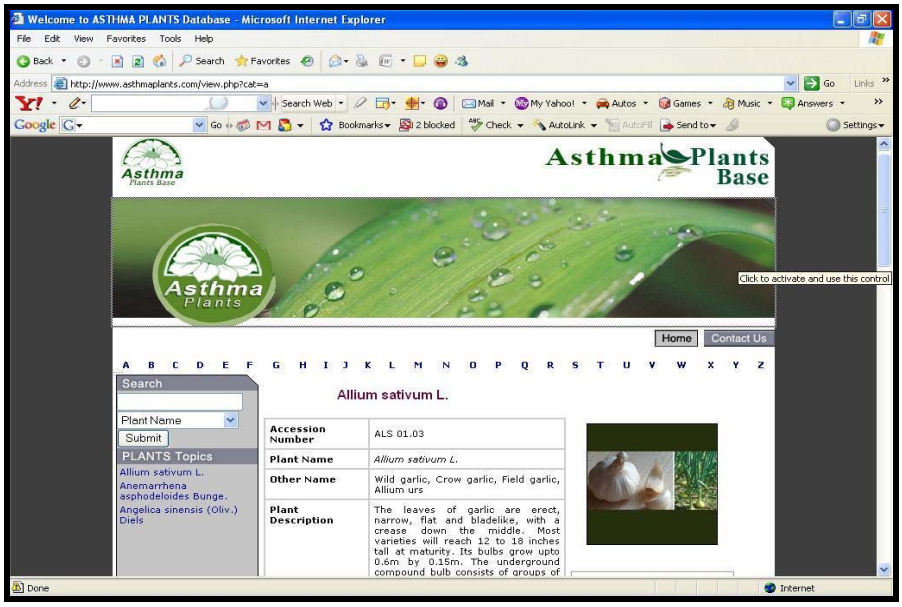

Figure 1: A screen shot of *Allium sativum* record entry in asthma plant base is displayed

Utility:

AsthmaPlantBase enlists plants used in the treatment of asthma. This is however, the first database containing medicinal plants for treatment of asthma. The database finds utility to the scientific community for a quick review on the number of plants and plant parts for asthma medicinal plant research and may serve as a platform for development of drugs.

Future development:

Currently the database can be accessed on multiple platforms. We also plan to update and refine this database periodically.

References:

[01] S. Govindan, *et al*., *J Ethnopharmacol.*, 66: 205 (1999) [PMID: 10433479]

[02] J. Zhao, *et al*., *J Pediatr Allergy Immunol.*, 13:47 (2002) [PMID 12000498]

[03] I. Kimber, *Toxicol Lett*., 102: 301 (1998) [PMID: 10022270]

[04] L. Maddox & D. A. Schwartz, *Annu. Rev. Med.*, 53: 477 (2002) [PMID 11818486]

[05] http://www.who.int/medicinedocs/

[06] V. P. Kamboj, *Curr. Sci*., 78: 35 (2000)

[07] S. G. Kiran *et al*., *Ind J Biotechnol*., 3:103 (2004)

[08] A. Mudappa & S. Oommen, *Amruth*., 2:10 (1998)

[09] G. R. Rout, *et al*., *Plant Cell Tiss. Org. Cul*., 27: 65 (1991)

[10] http://www.ncbi.nlm.nih.gov/entrez/query.fcgi ?db=Pubmed

[11] http://www.sciencedirect.com

[12] http://www.blackwell-synergy.com

[13] http://www.scirus.com

[14] http://www.ingentaconnect.com/content

[15] http://www.springerlink.com

[16] http://www.biomedcentral.com

Edited by P. Kangueane

Citation: Kasirajan *et al.*, Bioinformation 2(3): 105-106 (2007)