

## CITATION MAPPING OF PUBLISHED LITERATURE ON *EMBELIA RIBES*

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*Vidang, a well known drug in ayurvedic system of medicine, is obtained from the medicinal plant, Embelia ribes. Through citation mapping, a comprehensive bibliography has been compiled to study the research work done on this plant in India. Citation maps allow browsing through titles, and provides the users with some directions into the information available. It may be useful for researchers to identify areas where there could be more scientific study.*

### INTRODUCTION

Ayurveda aims at preservation of health and prevention of diseases by strengthening the immune system. Conventional medicine is a science that takes care of the physical body and its systems while ayurveda provides knowledge to unfold the reality beyond the physical body and achieve complete harmony in body-mind-spirit. Complimenting the two systems together will provide a complete system for good health. Since it is holistic, it approaches man as a whole and takes care of man's physical, mental and spiritual health.

*Embelia ribes* Burm.f. family Myrsinaceae, commonly known as 'Vidang' is a well known drug in Ayurvedic system of medicine. *Embelia ribes* is described since Vedic period as an important large climbing herb. For the first time, *Embelia ribes* and *Embelia robusta* were botanically described as 'Baiburang' by Roxburgh. The leaves, berries, seeds and root barks are employed in various formulations singly or in composite formulations. It occurs in the forests of Kerala and is collected for manufacturing of medicines, dyes cosmetics and other products [1]. The dried fruit mainly constitutes the drug, which is used as an antihelmintic, carminative, stimulant and alternative. Seeds of *E. ribes* have potent medicinal value as they are used for the preparation of various traditional drugs which

are prescribed in headache, rhinitis, hemicrania, epilepsy, insomania, anthelmintic, etc. The powder of seeds is also directly applied in ringworm. It is also used for the prevention of pregnancy and hair dying.

### MAPPING

Mapping is the methodology of developing knowledgebase for a given field. Mapping of knowledge provides an overview of the distribution of knowledge at different levels e.g. at the level of nations, states, cities/towns, institutions, journals, disciplines, sub disciplines etc. The work on maps of knowledge depends on the field considered for mapping knowledge such as papers published in professional journals and cross-citations for every such paper. In these maps, the items are positioned in relation to each others in such a way that those topics that are cognitively related to each other are positioned in each others vicinity, and those not or hardly related, are distant from each other. Generally science maps are constructed by the co-occurrence information principle, i.e., the more two elements occur together in one and the same paper, the sooner they will be identified as being closely related. Different elements of a bibliographic record may be used to generate a map structure. Each element reveals a specific structure, unique in a sense, but always related to the structures based on other elements.

### CITATION MAPPING

Citation mapping is the procedure of linking highly relevant citations starting from few current base articles in the subject and proceeding on choosing the highly relevant and latest references down to the first few preliminary publications in the subject.

In other words, they are the relational maps formed by following the citations to link present knowledge to the archival contributions. It gives an account of the discovery and the major developments in a field. Spatial, descriptive, and cognitive are different kinds of maps. Spatial mapping depicts the relationship between different fields of subject or specialties in two-dimensional space. For example, semantic boundaries between the areas of research or journals devoted to these areas. Cognitive mapping describes the relational and structural aspects of literature and its dynamics. Descriptive mapping relies largely on counting of surrogates of knowledge, viz., papers published in professional journals and cross citation among such papers. Such maps may help in information retrieval, research management, and science policy. Through citation mapping, one can pictorially depict scientific development [2]. Citation maps, (i) allow users to visualize relationships between scientific fields of study, as well as the scientific developments that arise during a certain time period; (ii) provide insight into a contemporaneous state of knowledge; and (iii) allow researchers to spot literatures that are indirectly related, which can lead to new topic development and discovery.

Citation mapping can take place only if there is some measurable coefficient of similarity. The closer the objects are to each other, the more closely related they are. Objects far away from each other have a weak direct link, but may be indirectly linked in some other way. For the mapping purpose, co-citation method has been chosen as the measure of similarity between articles. Examining co-citation in articles allowed creating multi-level clusters or partitions of related articles. The ordination of these clusters into a hierarchy created a group of local structures. These local structures were then integrated to form one global structure, or common coordinate space. This resulted in a citation map, where lower-level objects were represented as circles within higher-level objects [3].

Citation map is a great tool for reference librarians, allowing them to browse through titles, and providing them and the user with some direction into the information available [4]. For researchers,

citation maps could definitely prove useful, allowing them to see areas that may need more scientific study, or areas where there could be scientific study.

### **Single Mapping**

The latest and relevant reference is selected as link article at each level. The recall of the bibliography retrieved may not be impressive unless a number of base articles are mapped [5].

### **Multiple Mapping**

More than one relevant reference is selected as link articles at each level of the mapping, and there by, branching off the mapping at all levels. This type of citation mapping gives a fair idea of the importance of each reference by the number of times it is cited in the mapping.

## **METHODOLOGY**

A comprehensive bibliography on *Embelia ribes* was compiled by searching abstracting and indexing sources such as *CAB abstracts*, *Medicinal and Aromatics Plants Abstracts (MAPA)*, *Science Citation Index (SCI)*, *Biological Abstracts (BA)*, *PubMed*, and cross references from primary articles. Articles published before 1940 could not be easily retrieved, as the term is not indexed in secondary sources. Therefore, for the compilation of the bibliography, references of the original articles were studied. One hundred and eighty three original articles were collected through this process. On the basis of relevancy, mapping of six articles published in five journals were taken for the study. It was observed that these six most relevant articles (Appendix 1) were linked with 41 articles (Appendix 2). The six articles were selected as base articles for citation mapping. The process of elimination rather than selection chooses the relevant references in each of these articles. Among these articles the latest and highly relevant reference forms the link article and this process is continued until few articles on *Embelia ribes* were traced.

## **ANALYSIS AND CONCLUSION**

Only one relevant and latest reference is selected as link article at each level of the mapping as shown

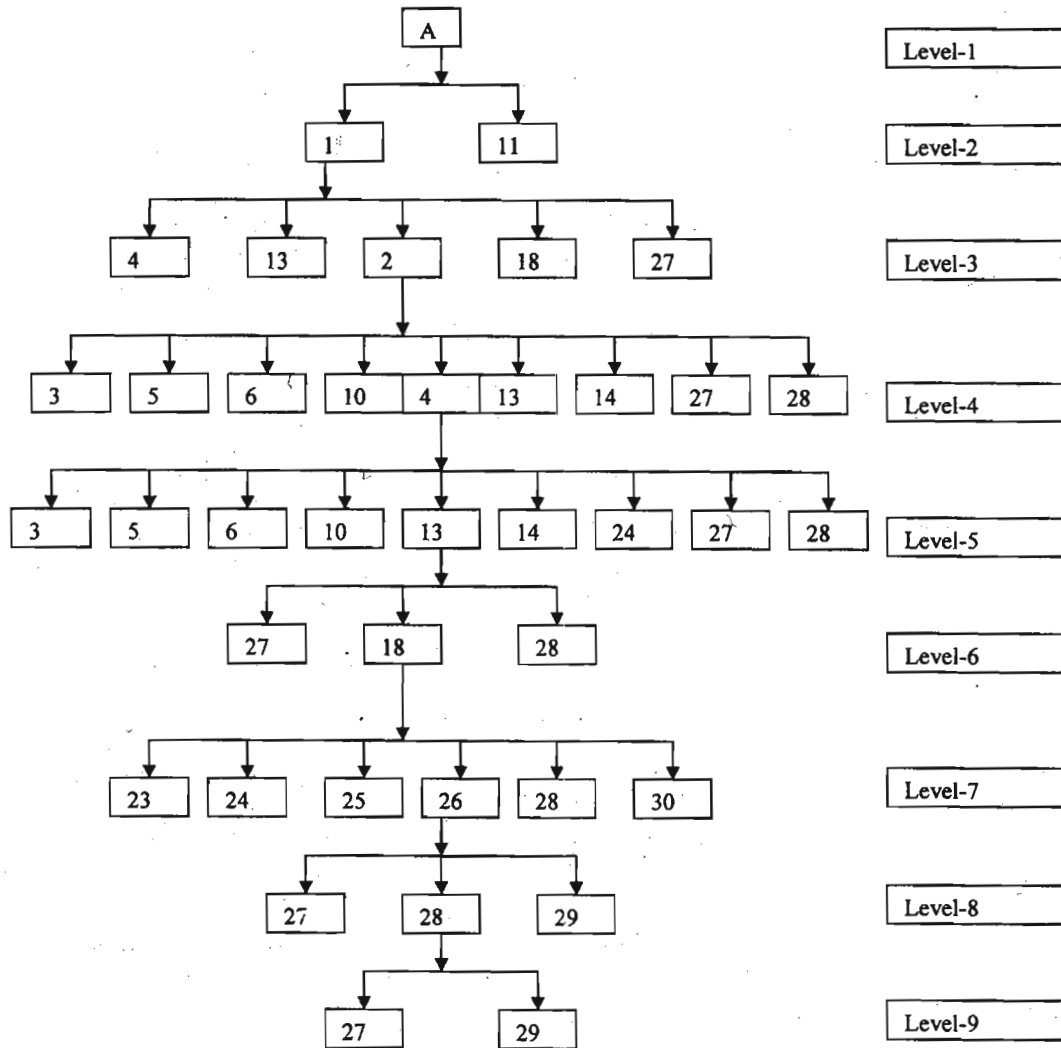


Figure 1 – Citations of article "A", the most recent article in the bibliography.

in Figure 1. In the mapping of article 'A' listed in Appendix-1, the link article at each level was judiciously selected based on currency and number of citations. The numbers in the boxes correspond to the references listed in the Appendix-2. The mapping involved nine link articles of which the original were checked for references. The mapping retrieved 19 references (46.34%), the precision of which was found to be of very high order. The recall was increased by mapping five more articles, terminating the mapping with coincidence of the link article as shown in Figure 2. This had resulted

in an increase of recall by 22 references (53.66%). The recall could be further improved by selecting more than one link article at each level i.e., by multiple mapping.

Though the work on this plant was started in the year 1887 in India, it is very interesting that out of 183 articles, only 71 (38.8%) articles were cited. Out of 71 articles, six articles were linked with 41 references. Therefore, only 41 articles were found to be linked in establishing mapping.

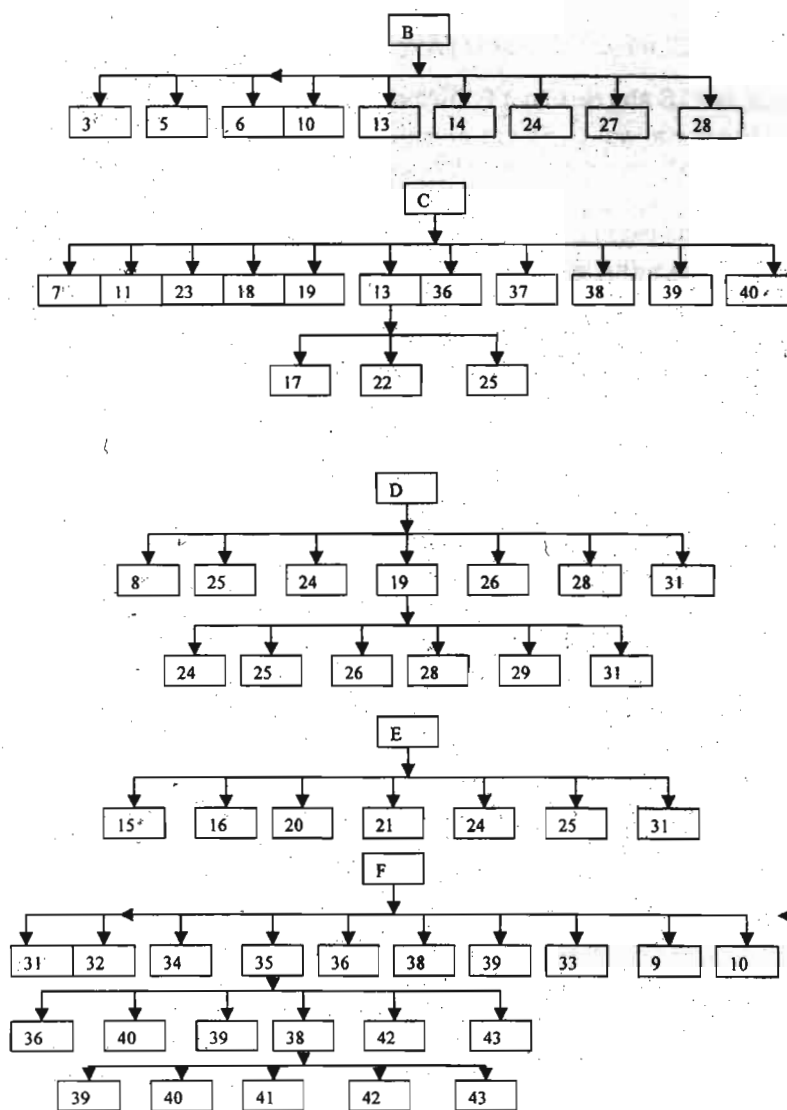


Figure 2 – Citations of articles “B, C, D, E and F”, the most recent article in the bibliography

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