**PRECISION AYURVEDIC MEDICINE PREDICTION**

**FINAL YEAR PROJECT**

**UNDER THE GUIDANCE OF**

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**B.E CSE I BATCH**

**PROBLEM STATEMENT:**

Allopathy refers to medical practise that is commonly known as western medicine or evidence-based medicine. Allopathy is wonderful in case of infection, emergency or life threatening conditions. Allopathy treatment is symptomatic one ie, it treats the symptom but not the root cause. The ailments like cold, fever, head-ache are just symptoms. They are the warning signals from our physical system. But the root cause might be a completely different one. It might be the imbalance due to lack of sleep/rest, physical/emotional stress, improper food at improper time, etc.

Allopathy drugs try to bring down the symptom by chemical effects which may give some temporal relief. Allopathy which is most commonly used system uses laboratory synthetic chemical composition as drugs and hence it definitely carries side effects. To cure those side effects again new drugs are prescribed. So it is better to avoid any prolonged usage of allopathy medicines. whereas alternative medicines like ayurvedic medicines are from herbs and they are natural plant extracts. They are largely derived from leaf, flower, fruit, root or bark of the plants. Right dosage for a prescribed time doesn't harm our system. it does not bring any side effects.

Our project “**Precision Ayurvedic Medicine Prediction**” deals with the prediction of the disease of human beings by getting details about the symptoms and finding out the corresponding ayurvedic medicines for the predicted disease. Allopathy medicines and treatments are widespread and prevalent in other countries as well as in India. But allopathy medicines often leads to cause side effects which may harm individuals as they are manufactured from chemical substances and are not natural. The consumption of allopathy medicines continuously for any type of disease may affect other parts of human body which may lead to some other disease.

Also, there are many websites and references to see or learn about allopathy. But as far as Ayurveda is considered, there aren’t any proper websites provided by India which gives complete details about Ayurvedic medicines.

**PROBLEM SOLUTION:**

AYURVEDA- “The complete knowledge of long life” is a system of traditional medicine. In Sanskrit Ayus means longevity and veda means related to knowledge or science. Ayurveda consists of five elements – earth, water, fire, air, ether – that compose the universe including human body. Ayurveda stresses the balance of 3 elemental energies or humours – Vata (air and space,”wind”), pitta(fire and water,”bile”), kapha(earth and water,” phlegm”). According to Ayurveda medical theory , these three substances – doshas – that are important for health, because when they exist in equal quantity body will be healthy, and when they are not in equal amount, body will be unhealthy in various ways. One ayurvedic theory asserts that each human being possesses a unique combination of doshas that define the person’s characteristic.

The vast field of Ayurvedic science is gaining more importance and popularity across the globe because of its amazing therapeutic values. Right from olden days it is believed that Ayurvedic herbs are supposed to give a solution for all kinds of diseases which was even considered impossible by other field of medical science. The Ayurvedic science which works based on the herbs promises wonders to mankind when taken in a wise and prudent manner.

Ayurveda is a holistic science that was discovered several years ago. It is preventive as well as curative. On the other hand, Allopathy has been introduced recently; and is widely accepted and practiced across the world. However, Ayurveda is highly popular and mainly followed in India.

The symptoms, disease and the corresponding Ayurvedic medications are scattered with no proper base and so they must be automated to provide an easy view to the users. Automation includes generating the corresponding disease for a particular set of symptoms and this includes many to many mapping i.e. change in a single symptom will be reflected.

**RELATED WORK:**

V.A.Shiva Ayyadurai’s published paper on the Rosetta Stone for Siddha and Ayurveda discusses that, The systems biology of Siddha and Ayurveda provides two important features that today’s modern systems biology seeks to replicate:

1. Holism

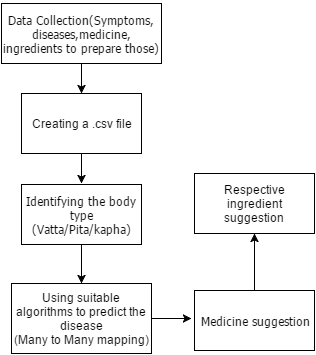
2. Personalisation, within a framework of control systems engineering.

The systems biology of Siddha and Ayurveda recognised fundamentally that health and well-being had to be personalised, and the concept of the individual Prakriti provides a mechanism to *personalise care to find the right therapies that enable the individual to find an optimal* of health that may be very different for another individual

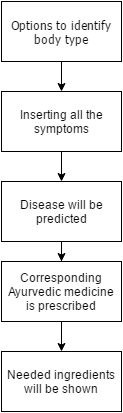
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| **S.NO** | **Papers/Articles** | **Pros** | **Cons** |
| 1 | Chatterjee B, Pancholi J.,Prakriti-based medicine: A step towards personalized medicine. Ayu.2011;32:141–6[PubMed] | Put forths Ayurveda's holistic approach and its emphasis on prevention and the potential to improve health status. | No systematic integration of prakriti based medicines yet. |
| 2 | Heather Collins,Sherri Calvo,Kathleen Greenberg, Forman Neall,Stephanie Morrison,Information Needs in the Precision Medicine Era: How Genetics Home Reference Can Help,2016 April | States the importance of research into consumers specific information needs related to precision medicine could help guide the evolution of existing educational resources and the development of new resources. | Deals with allopathy and genetic testing and not ayurveda |
| 3 | Precision medicine for advanced prostate cancer,Stephanie A. Mullane,Eliezer M. Van Allen,PMC 2016 Jul 21. | The concept of precision medicine driven by cody characteristics for CRPC | The stratification is applicable only for CRPC  Precision medicine is based on allopathy. |
| 4 | Clusters of Ayurvedic Medicines Using Improved K-means Algorithm, Kajal C. Agrawal and Meghana Nagori,ISBN: 978-981-07-5461-7,2013 | This paper discusses the Importance of Ayurveda, standard k-means and improved k-means clustering algorithm and its implementation to form clusters of ayurvedic medicine for four disease. | Automation for chronic diseases are missing. Implementation of medicine prediction given the symptoms are highly possible |

**BLOCK DIAGRAM:**

Back end process:



Front end view:



**MODULES:**

**MODULE 1: IDENTIFICATION OF BODY TYPE**

Precision Ayurvedic medicine prediction includes an user interface which provides facilty for the users to identify their body type. The body type of the individual can be of three types such as vatta, pita or kapha. The body type of the individual can be identified by analysing their physical , mental and emotional features. These features differs for each person and by analysing all the features using standard algorithms, the body types are identified.

The body types are identified by conducting a quiz which consists of questions about the person’s physical, mental and emotional features. The data given by the user is processed and the body type is evaluated using standard algorithms. The identification of body type is not necessary for alopathy treatement since the common medicines are preferred for all the patients irrespective of their body types. But in the case of Ayurveda, the identification of body type is mandatory since the symptoms and the disease differs for each body type and the corresponding herbs are suggested based on the body types vatta, pita and kapha.

**MODULE 2: PROCESSING OF DATA SETS**

The data sets are collected from different sources. These data sets consists of different types of diseases and their corresponding symptoms. Some of the symptoms are common for many diseases and they overlap. They are processed using clustering algorithms and the diseases are categorised. The data sets also consists of herbs and ayurvedic supplements and the diets to be followed for preventing the corresponding disease. The data sets are clustered using clustering algorithms in R programing language.

**MODULE 3: DISEASE PREDICTION**

The data sets consists of various diseases with their corresponding herbs and ayurvedic supplements. It also contains the diet to be followed for preventing such diseases. After identifying the body type of the individual, the user enters the symptoms and the corresponding disease will be predicted based on clustering algorithms. Although the symptoms may be seem to be similar, based on the body types the problem/disease is subjected to differ. Since many diseases may contain common symptoms and they overlap with each other, we use many to many mapping to correctly predict the disease.

**MODULE 4: MEDICINE AND HERB SUGGESTION:**

The disease is predicted by processing the data sets. In this module, herbs are suggested for the corresponding disease. Along with the medicines, the roots and shrubs required for the preparation of those ayurvedic medicnes will also be prescribed. This module also includes the suggestion of ayurvedic supplements. It also contains the information about the diet to be followed for the prevention of corresponding disease. Since the cost of ayurvedic medicines is less when compared to that of allopathy medicines and it does not produce any side effects and also there is no proper website for Ayurveda, our system identifies the disease and provides ayurvedic prescriptions.

**MODULE 5: INTEGRATING WITH SHINY R**

The front end of the system is designed using shiny R. Precision ayurvedic medicine Prediction will show an user interface which enables the user to find out their body types. This module involves designing the user interface of the system using shiny R and also the algorithms are converted in to R programming language.

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