

Enrollment No: MIT2021117

Paper chosen : paper 2 - Functional Diversity of Plant Metabolome and Microbiome in Health Services to the Human Life

1. Write if the paper is in right (IMRAD i.e. Introduction, Material & Methods, Results and Discussion And conclusion) format . If not, give reason.

The presented paper has all of the required main sections i.e.,

1. Introduction
2. Comparison and contrast of various plant metabolome and microbiome
3. Discussion on their pharmaceutical and nutritional values
4. Recent demonstration of various proof of concept
5. Conclusion which states that microbiome could be a key factor in defining the nature of both human and plant

However, the formatting of these sections is not explicit. Many sections were merged into one another and there is no clear boundary separating them.

Infact, the review paper only has one section of Introduction which has 6 paragraphs. Although, after first 2 paragraphs of introduction a heading for the next section was given with the name "The Path Through Pathways—Bioprospecting Plant Bioactives for Health" but it was not made bold like the "Introduction" section and hence it made it little difficult to comprehend.

2. Whether it has any fatal flaw. If yes give reasons. If not give your comments about the content of the paper .What is your opinion about the results given?Is there any novelty in its content?

The review paper does not have any fatal flaw.

The paper starts with a brief overview of the mechanism of how plants acquire various metabolomes which are essentially the set of small-molecule chemicals that are found in a biological sample.

Author states that various plants develop new metabolomes depending on the environment in which they grow and its dynamics. This leads to vast functional diversity in various plants. The author also states that the best model to study the functional diversity of plants are the medicinal and aromatic plants. This paper discusses the functional diversity of plant metabolomes in regards to their utility for mankind in tangible terms through illustrative case studies. The author stresses on the importance of understanding the microflora, which is a collective term used to describe all the bacteria that are present in the human gut, for understanding human health and performance.

In the introduction section, the author states that plants are one of the biggest natural resources for various pharmaceutical and nutritional needs. Not only this but they also serve as the raw materials for various other industries like perfumery, cosmetics, toiletries, food and beverages.

Then the author shifts the focus on Bioprospecting which is the exploration of natural sources for small molecules, macromolecules and biochemical and genetic information that could be developed into commercially valuable products for the agricultural, aquaculture, bioremediation, cosmetics, nanotechnology, or pharmaceutical industries. The author also states that bioprospecting could help in solving some of the biggest problems which include billion dollar categories like anti-obesity, anti-diabetes, anti-cancer, etc. In recent times several plant species have been identified for serving many of these therapeutic categories.

Author also states that while plant leaf, stem and root extracts have been widely evaluated for bioactive compounds, screening of plant flowers and their seed has not been extensive. This should be done as in some studies seeds of certain plants are observed to possess antimicrobial activity.

Finally the author concludes that in order to better understand human health, a good understanding of the metabolome of the bacterias that are present in the human gut is needed which is not done yet.

3. Give details on how the author can improve the paper? Mention if there are any language or grammatical errors.

There are following issues which should be corrected before publishing it in any of the proceedings, journals etc.

1. Major issues:

- a. The review paper only has one section(the Introduction) currently. Although, the paper contains all the required sections and the arguments are also well formed but there are no clear boundaries between various sections. All sections seem to be merged into one another.
- b. Therefore, it is recommended that the reviewer should give explicit headings for various sections like methods, discussion, results, gaps/need of further research, conclusion etc.

2. Minor issues:

- a. The formatting of the second column of table 1 “Therapeutic category” is not consistent. The word “Anti-diabetes” is not aligned correctly with the column.
- b. Also the details of the author is given in the after the abstract where one usually expects the beginning of the introduction. It would be better if this information is provided before the beginning of the abstract. Also a lot of space is wasted in the first paper before the beginning of the abstract. This space may be utilized for giving the communication information of the author.