6. CONCLUSION

The utilization of herbal medicine in healthcare has gained significant attraction in the 21st century. This approach, rooted in centuries-old traditions, remains prevalent among various indigenous tribal populations. The search for natural or novel drugs holds promise, especially concerning the side effects associated with existing allopathic medicines. The wisdom of medicinal plants, passed down through generations, is a result of extensive learning, observations, and practices aimed at combating diseases. Kokrajhar district of Assam, situated amidst the Indo-Myanmar and Indo-Bhutan geographical realms, boasts a rich diversity of ethnomedicinal plants. The local population relies heavily on plant-based medicines for their healthcare needs, underscoring the importance of documenting this knowledge to preserve it for future generations.

A survey was conducted to explore and document the medicinal plants used for treating diabetes in Kokrajhar district, Assam. Elderly individuals emerged as the primary resource persons, possessing valuable knowledge about the usage of medicinal plants. A total of 37 species belonging to 24 families and 33 genera were documented, with various plant parts being utilized for medicinal purposes. Among these, 11 plants lacking literature records underwent further phytochemical analysis. All the plants showed considerable tested phytochemicals in them suggesting its medicinal use. Traditional medicine serves as the foundation of modern medicine, contributing numerous plant-derived therapeutic agents. Despite the development of a wide range of medicines, controlling diabetes remains challenging due to the side effects associated with current treatments. Many medicinal plants hold potential as sources of newer drugs with lower toxicity or side effects, yet many remain unexplored. In our study, phytocompounds were extracted using a hydroalcoholic solvent, revealing the presence of various phytochemicals and strong antioxidant properties in the tested plants. Moreover, no toxic elements were found, and GC-MS analysis unveiled a plethora of probable compounds, some of which were reported for the first time.

α-Amylase and α-glucosidase inhibition are crucial strategies for managing diabetes, and *Ficus racemosa* fruit extract exhibited potent in vitro antihyperglycemic properties among the 11 tested plants. Further, the best plant parts showing the most

substiantial α-amylase and α-glucosidase property has been carried out for fractionation into four different fractions viz., hexane, diethyl ether, ethyl acetate and methanol. The diethyl ether fraction of *Ficus racemosa* demonstrated superior activity compared to other solvent fractions, indicating its potential for further investigation. Additionally, acute and subacute toxicity studies on Wistar male rats revealed no adverse effects, while the fraction exhibited glucose-reducing potential in STZ-induced diabetic rats. A huge surge of liver and kidney enzymes were seen in diabetic rats when compared to the normal rats. However, the higher dose of the fraction i.e. 200 mg/kgbw FRDF treated rats showed better efficacy in terms of blood parameters such as liver enzymes, kidney profile and lipid profiles among the other dose treated diabetic rats almost similar to normal control rats after 28 days of treatment. These findings suggest a strong antihyperglycemic property of FRDF. Our findings observed a rich ethnomedicinal knowledge system from the district, which serves as a primary healthcare resource for rural and impoverished communities. The practice of healing diseases with medicinal plants is still highly popular, despite the advancements in modern healthcare facilities. It suggests that they have found strong evidence of medicinal plants which can cure different diseases. The substantial phytochemical content and antioxidant properties of *F. racemosa*, coupled with its effective reduction of glucose levels in diabetic rats, scientifically validate the traditional healers' claim of the plant's antihyperglycemic property. Furthermore, the healing potential of the plant of the plant may be attributed to its active compound which could have serve as an antidiabetic agent. Additionally, our findings suggest that the fraction may have the ability to regenerate β-cells or act as an insulin analogue, thereby improving diabetic biochemical and histochemical profiles. Further research, including ultrastructural studies and isolation of active components, is warranted to elucidate the exact mode of action and identify potential chemotherapeutic targets, which may lead to the development of new therapeutic drugs against diabetes.