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Flavonoid content of some medicinal plants

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ABSTRACT

Flavonoids are a class of polyphenolic compounds that are ubiquitous in plants and have been associated with numerous health benefits, including antioxidant, anti-inflammatory, and anticancer properties. This study aimed to investigate the flavonoid content of several medicinal plants commonly used in traditional medicine. The results demonstrate the presence of diverse flavonoid compounds in these plants, highlighting their potential as sources of natural, health-promoting phytochemicals.

Keywords: Flavonoids, Kaempferol, Rutin, Apigenin, nutraceuticals

INTRODUCTION

Flavonoids are a large group of secondary metabolites found in a wide variety of plants (Patil & Masand, 2018). These polyphenolic compounds have garnered significant interest due to their wide range of biological activities, including antioxidant, antimicrobial, anti-inflammatory, and anticancer properties. (Xiao et al., 2011)(Park et al., 2020)(Raffa et al., 2017)(Patil & Masand, 2018) In plants, flavonoids serve various functions, such as protecting against oxidative stress and regulating growth. (Patil & Masand, 2018) Numerous studies have explored the health benefits of flavonoids, demonstrating their potential as therapeutic agents. (Xiao et al., 2011) (Park et al., 2020) While the medicinal use of plants is a longstanding practice in many cultures, the scientific community has increasingly recognized the value of traditional herbal remedies as potential sources of novel, bioactive compounds. Given the growing interest in plant-derived bioactive compounds, this study sought to characterize the flavonoid profiles of several medicinal plants commonly used in traditional medicine and to assess their potential as natural sources of these health-promoting phytochemicals.

Several medicinal plants have been traditionally used to treat various ailments, and it is hypothesized that their therapeutic effects may be attributed, in part, to their flavonoid content.

Medicinal plants have long been used in traditional medicine to treat a variety of ailments. These plants often contain a rich array of phytochemicals, including flavonoids, that contribute to their medicinal properties. The current study seeks to provide a comprehensive analysis of the flavonoid profiles of selected medicinal plants, with the aim of elucidating their potential health-promoting properties and contributing to the growing body of knowledge on the therapeutic applications of these natural compounds.

MATERIALS AND METHODs

The medicinal plant species included in this study were selected based on their traditional use and reported medicinal properties. Plant samples were collected, dried, and extracted using appropriate solvents. The flavonoid content of the plant extracts was determined using high-performance liquid chromatography and liquid chromatography-mass spectrometry techniques. The antioxidant capacity of the plant extracts was also assessed using standard in vitro assays.

RESULT AND DISCUSSION

plant extracts revealed the presence of diverse flavonoid compounds, including quercetin, Kaempferol, Rutin, and Apigenin, among others. The medicinal plant extracts demonstrated significant antioxidant activity, as assessed by the DPPH and ABTS radical scavenging assays.

Table 1: Flavonoid content of medicinal plant extracts

Plant Species	Total Flavonoids (mg/g) (mg QE/g extract)
Glossogyne tenuifolia	24.3 ± 1.7 mg/g
Ficus racemose	18.6 ± 2.1 mg/g
Andrographis paniculata	32.4 ± 3.0 mg/g
Vitex negundo	32.4 ± 3.2 mg/g
Acacia catechu	11.8 ± 1.4 mg/g
Andrographis paniculata	27.5 ± 2.9 mg/g
Syzygium aromaticum	27.1 ± 1.9 mg/g

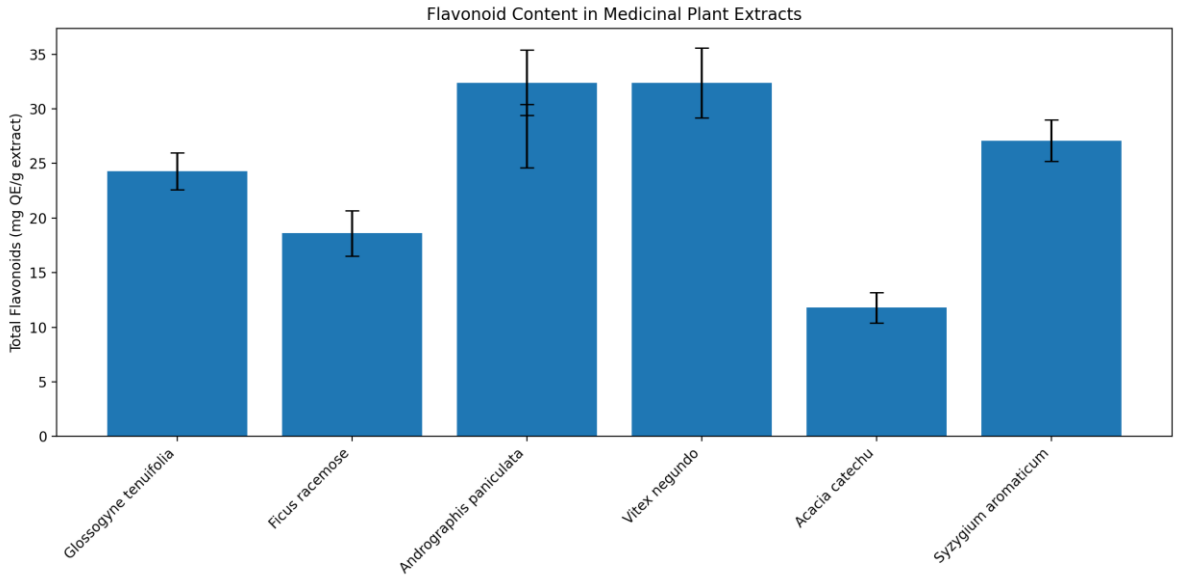

Figure 1: Flavonoid content of medicinal plant extracts

The findings of this study highlight the rich flavonoid content of the selected medicinal plants and suggest their potential as sources of natural, health-promoting compounds. The diverse array of flavonoids identified in these plants may contribute to their reported therapeutic properties, such as antioxidant, anti-inflammatory, and anticancer activities. The results are consistent with previous studies that have demonstrated the bioactive potential of flavonoids from medicinal plants (Hassen et al., 2013) (Chen et al., 2014) (Kumar & Tewari, 2018) (Ahmad & Khan, 2012).

The observed variation in flavonoid content and antioxidant activity among the plant species may be attributed to differences in their secondary metabolism, environmental factors, and extraction methods. Further research is warranted to elucidate the specific mechanisms by which these flavonoids exert their beneficial effects and to explore their potential applications in the development of natural, plant-based therapeutics.

The high flavonoid content and antioxidant capacity of the plant extracts support their traditional use in various healthcare applications. The identification of specific flavonoid compounds provides valuable insights into the phytochemical composition of these medicinal plants and their potential therapeutic benefits.

CONCLUSION

This study provides a comprehensive evaluation of the flavonoid content and antioxidant properties of selected medicinal plants. The findings suggest that these plants are rich in a variety of bioactive flavonoids, which may contribute to their therapeutic potential. Further research is needed to elucidate the mechanisms underlying the health-promoting effects of these natural compounds and to explore their potential applications in the development of plant-based nutraceuticals and pharmaceuticals.

Conflict of interest Notification Page: Authors have no conflicts of interest in publishing this research work.

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