

## The potential of Lamiaceae plants in developing functional foods: A patent analysis for preventing and treating cardiovascular diseases

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### INTRODUCTION & AIM

- Medicinal plants from the *Lamiaceae* family hold significant potential in developing functional foods for cardiovascular disease (CVD) prevention and treatment.
- These plants are rich in bioactive compounds and essential nutrients, including phenolic and flavonoid compounds, which act as potent enzyme inhibitors with strong antioxidant and anti-inflammatory activities.
- Specific species, such as *Salvia moorcroftiana* and *Ocimum sanctum*, have been studied for their beneficial phenolic profiles and bioactivities.
- Essential oils from *Lamiaceae* herbs demonstrate diverse biological activities, including CVD prevention and treatment, due to their antioxidant, antihyperlipidemic, vasorelaxant, thrombolytic, and cytotoxic properties.
- These attributes make *Lamiaceae* herbs valuable natural ingredients in nutraceutical formulations and various health applications.
- In this work, we use patent analysis to explore the areas of technological innovations relating CVD's and plants from *Lamiaceae*.

### METHOD

- Based on the patent analysis of *Lamiaceae* plants for developing functional foods targeting CVD prevention and treatment, several key findings emerge.
- Patent-specialized databases, "The Lens" and "Google Patents", were used to collect data that associates cardiovascular disease with the IPC code "A61K36/53". This code refers to the medicinal preparation, including any plant species from the *Lamiaceae* family.
- We analyzed the collected patent documents (granted patents and applications), with a particular focus on the number of patent documents published, applicants, and jurisdictions.
- The classification codes attributed to the documents allowed us to deduce the relevant technological fields for the studied area.

### RESULTS & DISCUSSION

- 260 patent documents were collected and analyzed. Only three documents were published earlier to 1996.

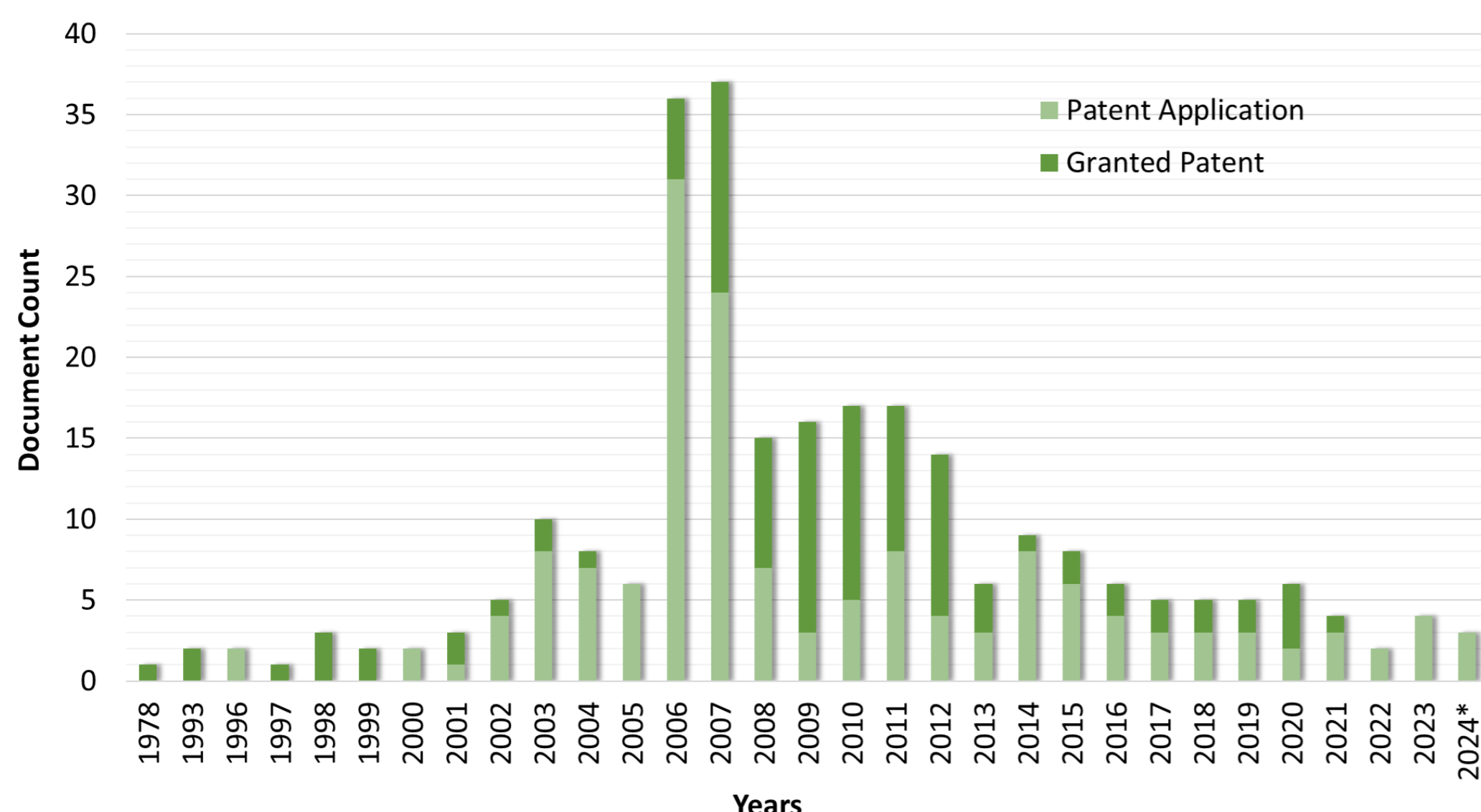


Figure 1. The evolution of the number of patent documents published since 1996 concerning the CVD / *Lamiaceae*.

\*Year 2024 data is limited to October 5<sup>th</sup>.

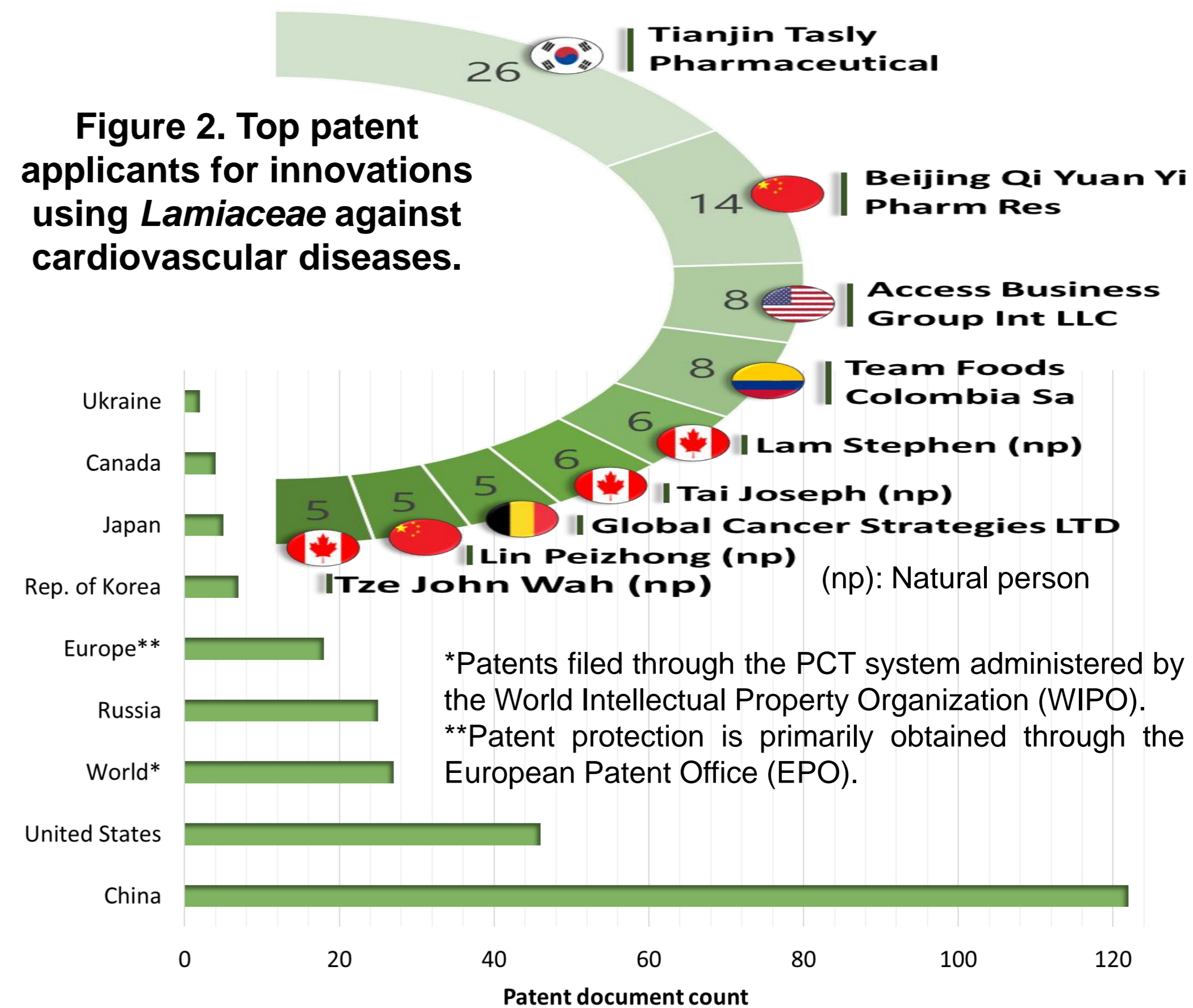


Figure 2. Top patent applicants for innovations using *Lamiaceae* against cardiovascular diseases.

\*Patents filed through the PCT system administered by the World Intellectual Property Organization (WIPO).  
\*\*Patent protection is primarily obtained through the European Patent Office (EPO).

Figure 3. Top jurisdiction focusing on CVD and *Lamiaceae* innovations.

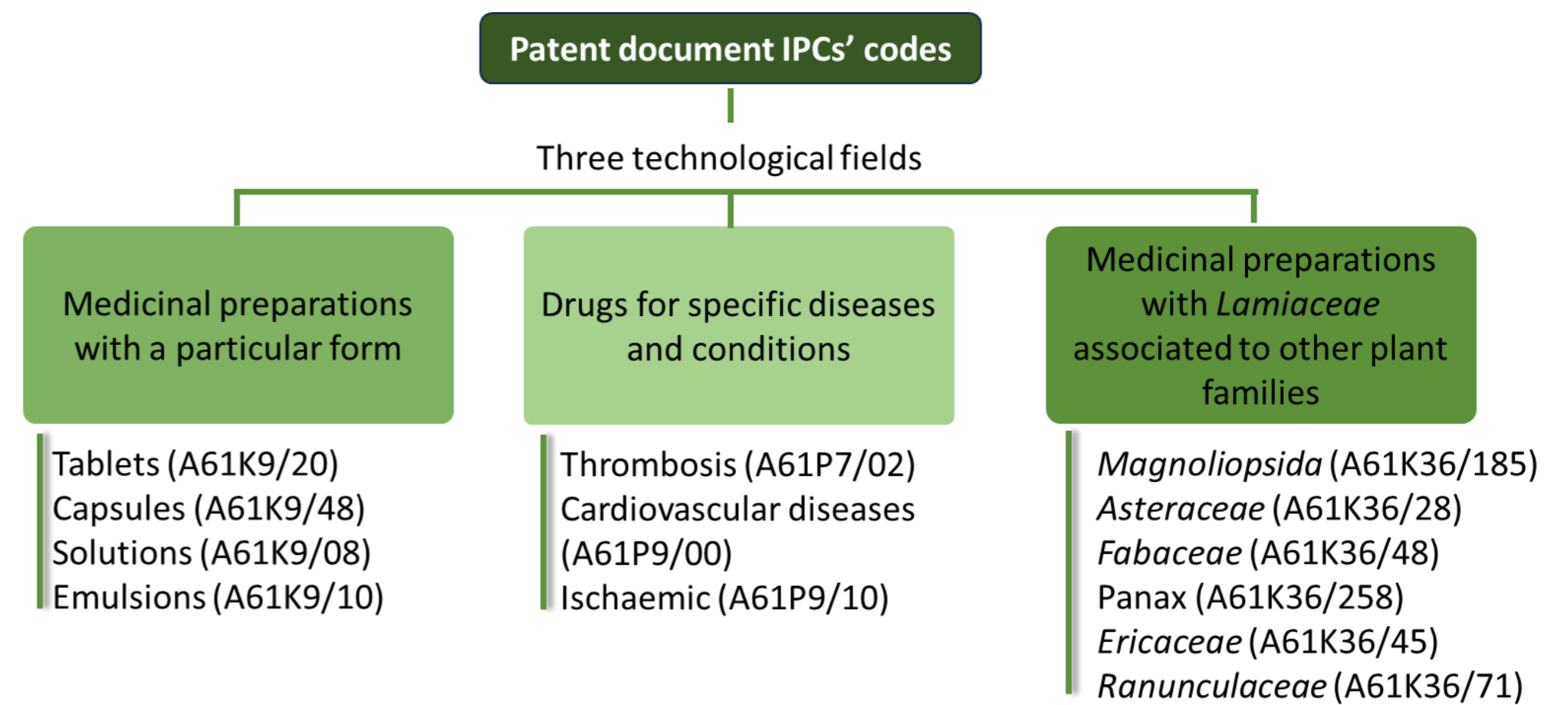


Figure 4. The technological fields covered by the study's patents.

### CONCLUSION

- There has been a noticeable increase in patent filings during the 2000s and 2010s, peaking around 2007.
- The top patent applicants include a mix of pharmaceutical companies, independent researchers, and organizations leading the filings.
- The geographical distribution shows China as the predominant jurisdiction for patent activity, followed by the United States, indicating strong regional focus and potential markets.
- The International Patent Classification (IPC) codes assigned to the documents in this study indicate that the technological applications are aimed at drug forms, diseases related to heart conditions, and associations with other plants.
- This study underscores the significant potential of *Lamiaceae* plants in the nutraceutical industry, driven by their rich bioactive compounds and diverse therapeutic properties.

### FUTURE WORK / REFERENCES

- Cambia Institute. The Lens Patent Data Set. Available online: [www.lens.org](http://www.lens.org)
- Google. Google Patents Research Data. Available online: <https://patents.google.com>
- World Intellectual Property Organization. IPC Publication. Available online: [www.wipo.int/classifications/ipc/ipcpub](http://www.wipo.int/classifications/ipc/ipcpub)