

SAFETY INVESTIGATION OF CANDESARTAN INDUCED OSTEOARTHRITIS: REAL-WORLD DATA ANALYSIS FOR NOVEL SIGNAL USING FAERS DATABASE

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INTRODUCTION

Candesartan, an **angiotensin receptor blocker** was utilized as an **antihypertensive medication**. Candesartan works by **blocking the angiotensin II receptor type 1**, reducing blood pressure and fluid retention. It binds ten-thousand times more strongly to angiotensin II receptor type 1 than type 2, leading to **vasodilation** and **decreased blood pressure**. Signal detection of candesartan helps in the detection of **unidentified Adverse Drug Reactions (ADRs)** of candesartan.

OBJECTIVE

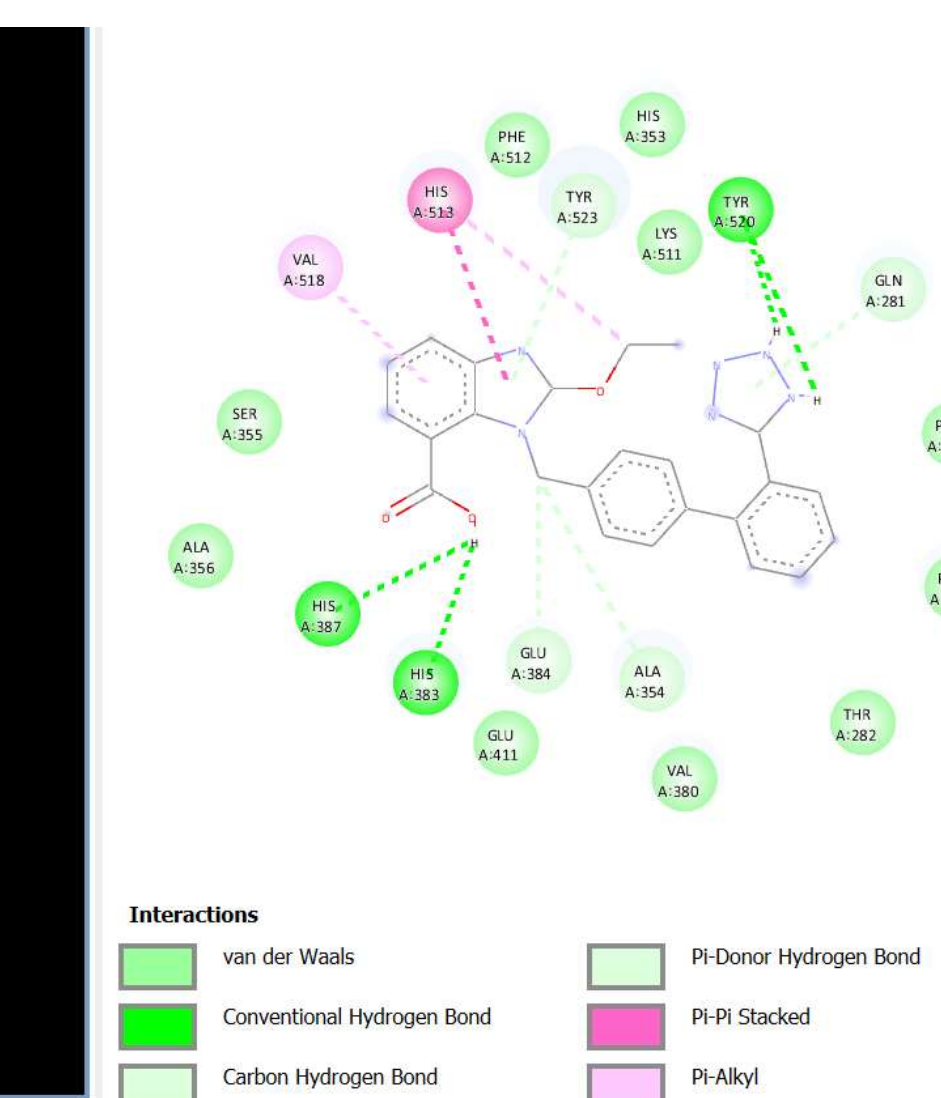
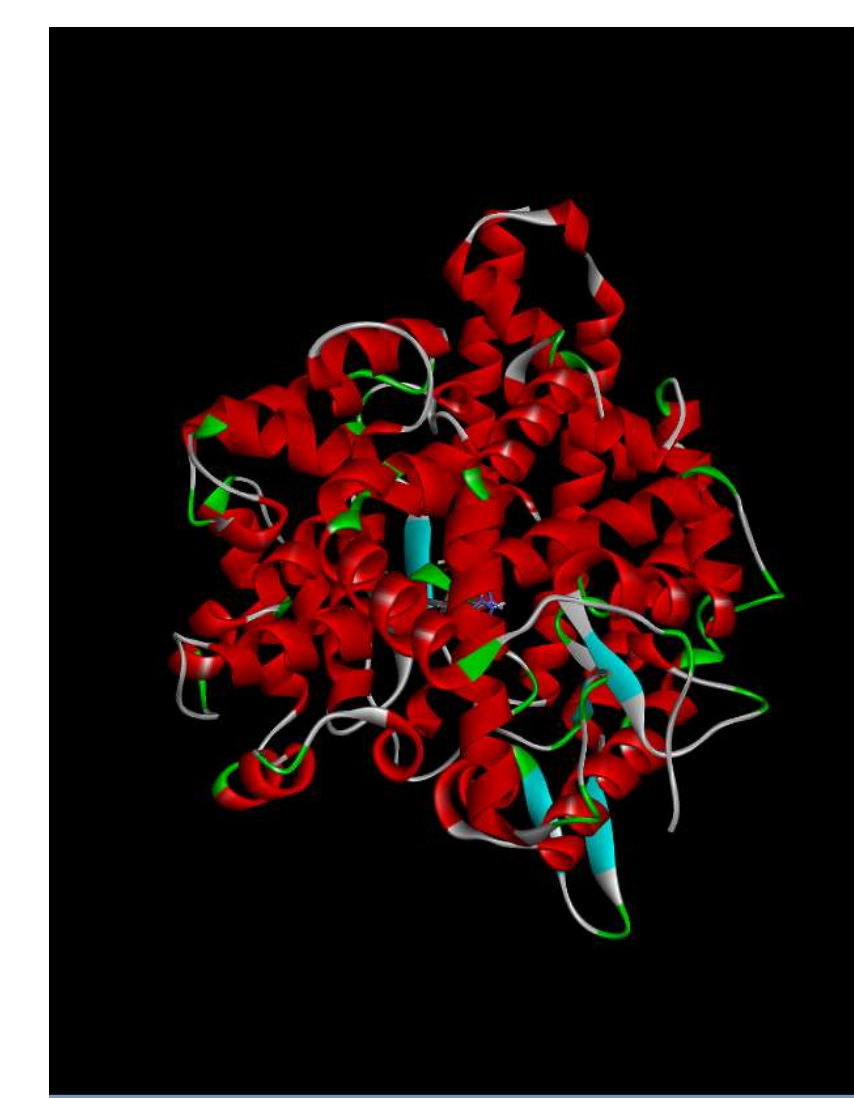
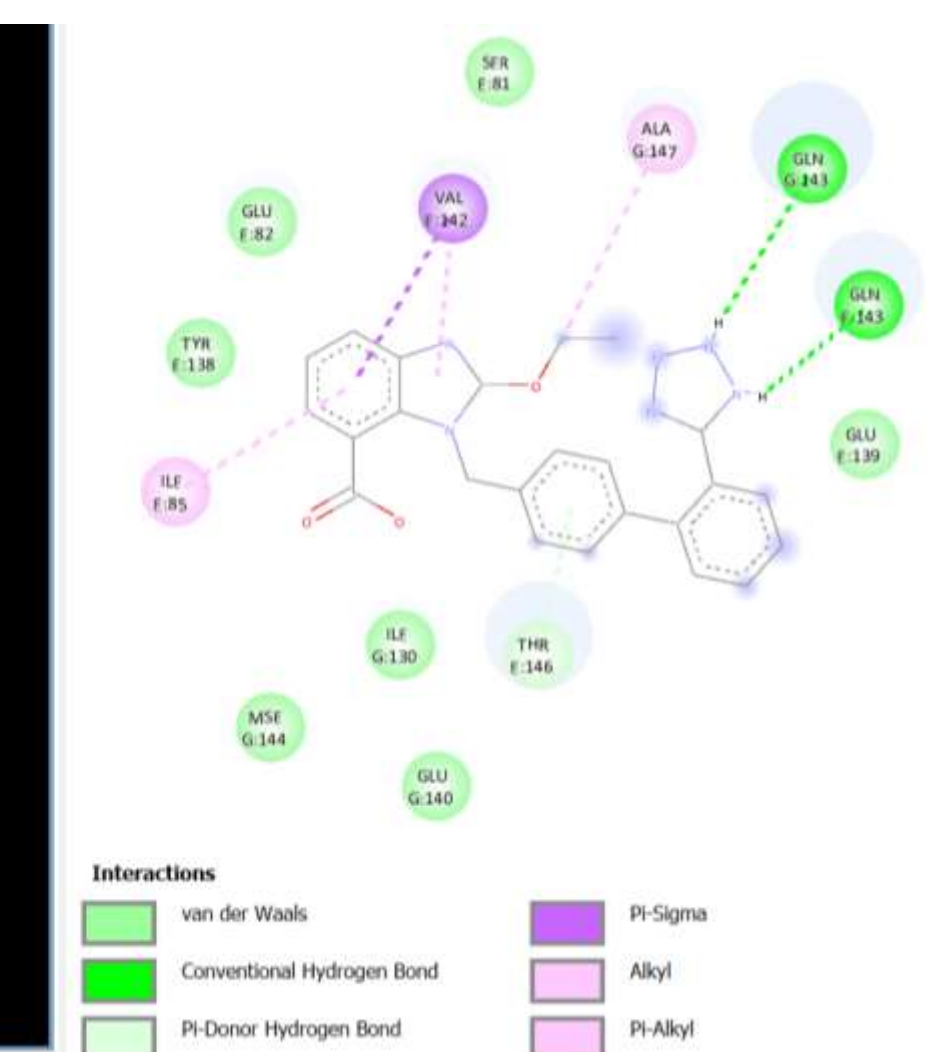
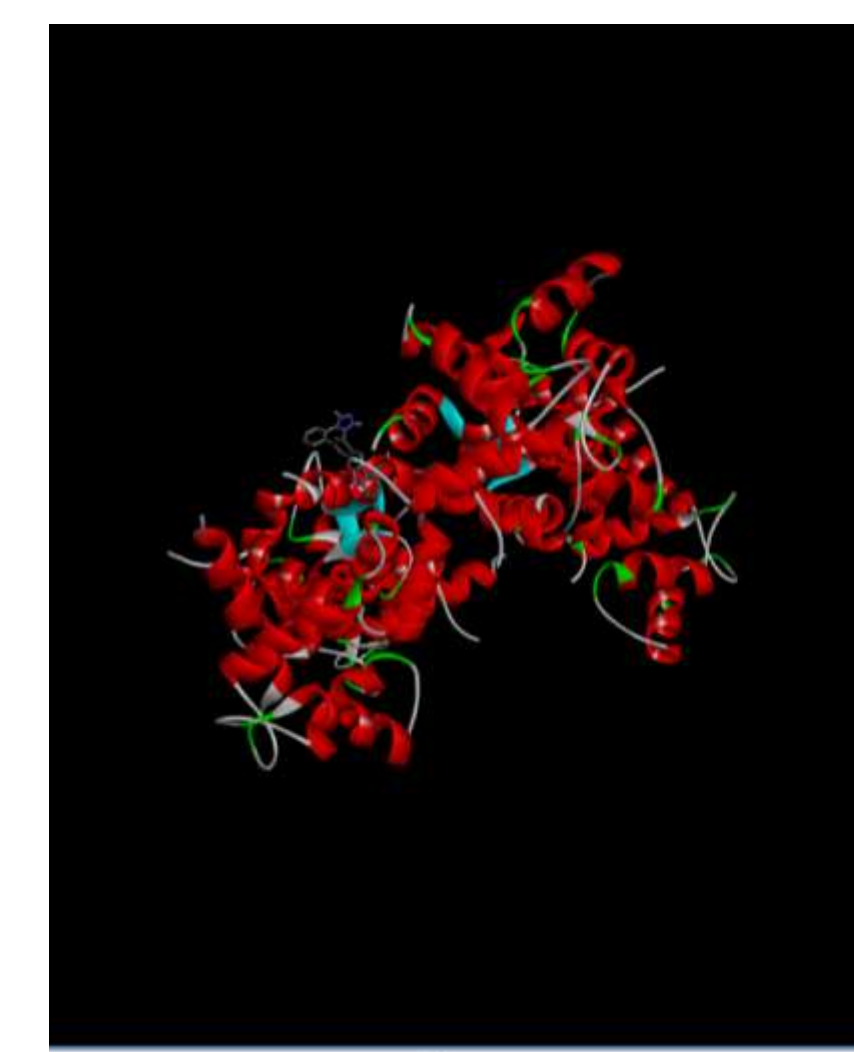
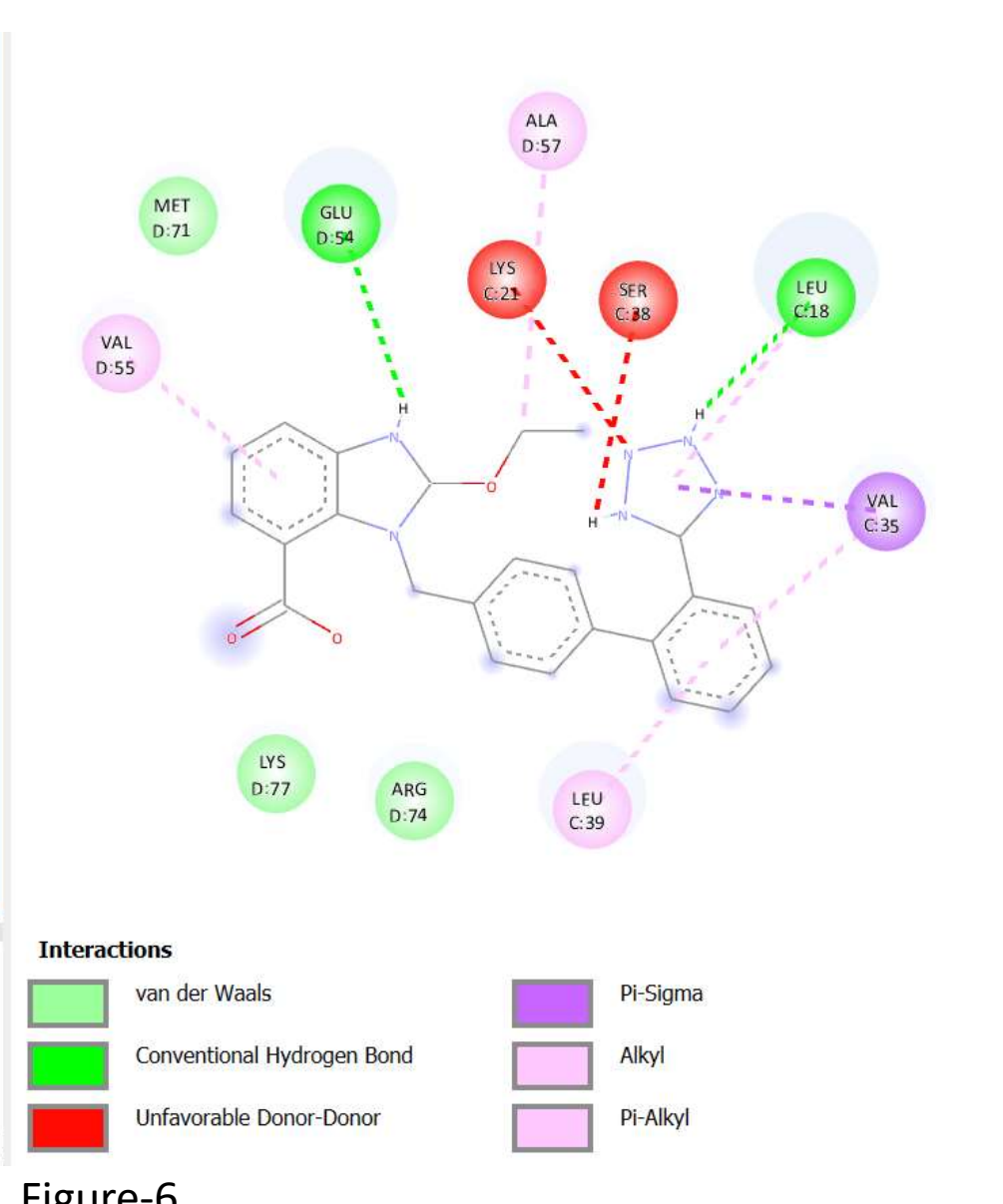
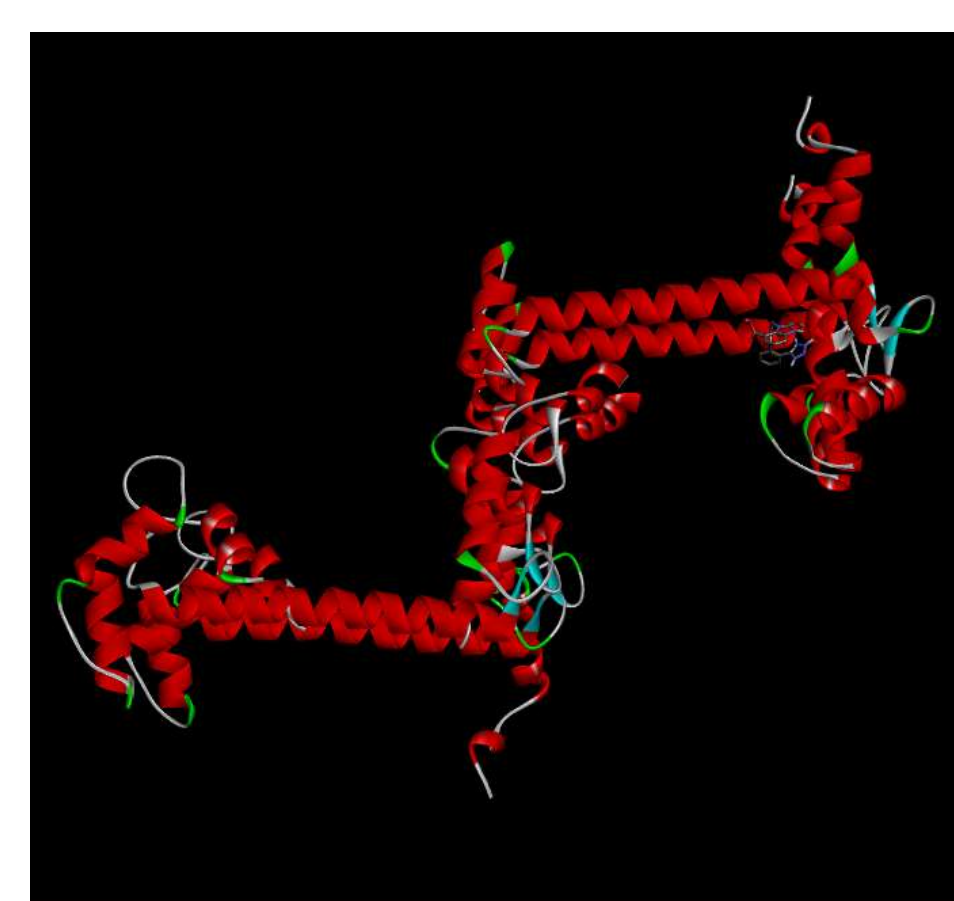
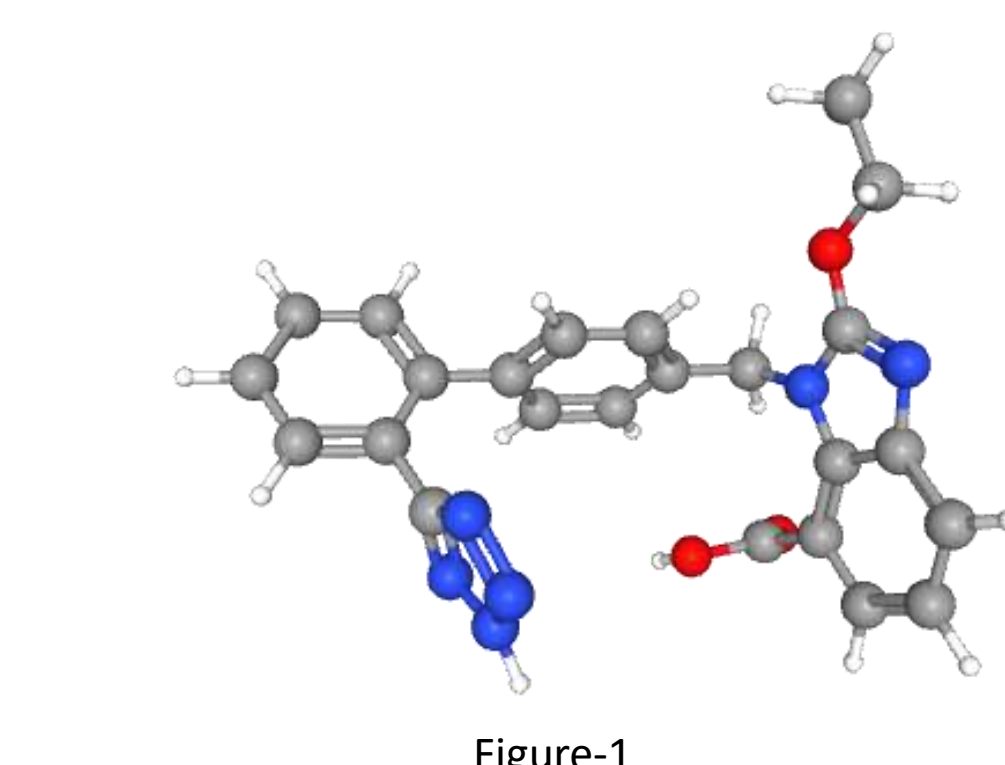
This study aimed to explore the novel signals reported for Candesartan in the US Food and Drug Administration Adverse Event Reporting System (FAERS) database from April 1998 to June 2024.

METHOD

- In this study, **FAERS data** was analysed to identify a novel signal for Candesartan.
- The data mining algorithms like **Proportional Reporting Ratio (PRR)** and **Reporting Odds Ratio (ROR)** values were obtained from **OpenVigil database**.
- Positive signals were defined as values of **PRR \geq 2**, **ROR-1.96SE $>$ 2**, **chi square $>$ 4** with **more than 2 adverse events**.
- The genes and proteins associated with Osteoarthritis were found out from various databases such as **STITCH**, **STRING** and **HuGE Navigator**.
- Later these genes were docked with Candesartan using **BIOVIA Discovery Studio**, **PyRx**, **Pymol** and **Swiss PDB viewer**.

RESULTS

- A total of **28655483 adverse events** are reported in the database. Candesartan got its **FDA approval on 6th of April 1998**. Since then, the drug accounted for **6551 events**.
- The **OpenVigil data** showed **12 events for Osteoarthritis**
- The **PRR value** was found to be **1.967 (1.11; 3.46)**, **ROR was 1.97 (1.11; 3.47)**, **Chi-Squared with Yates' correction was 4.78** which indicated **positive signals**.
- The **rate of occurrence of drug event and drug administered is observed to be 0.27% based on the real- world data**.
- The **genes involved in osteoarthritis** according to the bioinformatics databases are **CALM1**, **IL1** and **GDF5** with the highest binding affinity of **-8.4**, **-7.9** and **-6.8** respectively.



CONCLUSIONS

The results of our study aligned with the specifications to confirm the novel signal osteoarthritis with candesartan. The CALM1, IL1 and GDF5 genes and proteins showed association between candesartan and osteoarthritis. However, further pharmacoepidemiologic and pharmacogenetic analysis are required to establish the mechanism of the reported Adverse Drug Reaction due to the inherent limitations of the FAERS data.

REFERENCES

- Subeesh, V., Maheswari, E., Singh, H., Beulah, T.E. and Swaroop, A.M., 2019. Novel adverse events of iloperidone: a disproportionality analysis in US Food and Drug Administration Adverse Event Reporting System (FAERS) database. *Current drug safety*, 14(1), pp.21-26.
- Gleiter, C.H., Jägle, C., Gresser, U. and Mörike, K., 2004. Candesartan. *Cardiovascular drug reviews*, 22(4), pp.263-284.

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This poster was presented at **International Society for Pharmacoeconomics and Outcomes Research (ISPOR) Europe 2024** held at **International Barcelona Convention Centre, Barcelona, Spain** from **17th to 20th November 2024**