



SFDA SAFETY SIGNAL

“A signal is defined by the SFDA as reported information on a possible causal relationship between an adverse event and a drug, the relationship being unknown or incompletely documented previously. Usually more than a single report is required to generate a signal, depending upon the seriousness of the event and the quality of the information. A signal is a hypothesis together with data and arguments and it is important to note that a signal is not only uncertain but also preliminary in nature”

12-08-2026

Saudi Food and Drug Authority (SFDA) – Safety Signal of Carbamazepine and the Risk of Encephalopathy

*The Saudi Food and Drug Authority (SFDA) recommends all health care professionals to be aware of the safety signal of **Encephalopathy** associated with the use of **Carbamazepine**. The signal has been originated as a result of routine pharmacovigilance monitoring activities.*

Introduction

Carbamazepine is used to manage and treat epilepsy, trigeminal neuralgia, and acute manic and mixed episodes in bipolar I disorder. Indications for epilepsy are specifically for partial seizures with complex symptomatology (psychomotor, temporal lobe), generalized tonic seizures (grand mal), and mixed seizure patterns. ^[1] Encephalopathy is a change in how your brain functions. The person may feel confused, agitated. It can be a temporary disturbance or it could permanently damage the brain. There are many possible causes of encephalopathy, like an infection or an underlying condition. Treatment depends on the cause. ^[2] The aim of this review is to evaluate the risk Encephalopathy associated with the use of Carbamazepine and to suggest regulatory recommendations if required.

Methodology

Signal Detection team at SFDA performed a signal review using National Pharmacovigilance Center (NPC) database, and World Health Organization (WHO) database, Vigibase, with literature screening to retrieve all related information to assess the potential link between Encephalopathy and Carbamazepine use.

Results

Cases Review: Signal detection team at SFDA have searched Saudi national database and WHO database to find individual case safety reports (ICSRs). The WHO database resulted in 154 global case reports while the NPC database resulted in 1 local case report, which triggers this investigation. The authors used signal detection tool (Vigilyze) to retrieve global cases. ^[3] The author applied WHO Causality assessment tool on cases with completeness score 0.8 and above = 18 ICSRs. Four cases were considered probably associated with Carbamazepine, ten showed a possible association, one was assessed as unlikely to be associated, and the remaining three cases were unassessable.

Datamining: The disproportionality of the observed and the expected reporting rate for drug/adverse drug reaction pair is estimated using information component (IC), a tool developed by WHO-UMC to measure the reporting ratio. Positive IC reflects higher statistical association while negative values indicate less statistical association. The IC result is (1.5) for this drug/ADR combination which reflects positive statistical association. ^[3]



Literature: The signal team conducted a literature search to identify publications linking this adverse drug reaction to Carbamazepine. The search identified one published study suggesting a possible association between the drug and this potential risk. ^[4]

Conclusion

The weighted cumulative evidence identified from assessed local and global cases, disproportionality analysis and literature are suggestive for causal association between Carbamazepine and Encephalopathy. Health care professionals and health regulators must be aware of the potential risk in drug recipients.

Report Adverse Drug Events (ADRs) to the SFDA

The SFDA urges both healthcare professionals and patients to continue reporting adverse drug reactions (ADRs) resulted from using any medications to the SFDA either online, by regular mail or by fax, using the following contact information:

National Pharmacovigilance Center (NPC)
Saudi Food and Drug Authority-Drug sector
4904 northern ring branch rd
Hittin District
Riyadh 13513 – 7148
Kingdom of Saudi Arabia
Toll free number: 19999
Email: NPC.Drug@sfda.gov.sa

References

- 1- Maan, J. S., & Saadabadi, A. (2023). Carbamazepine. In StatPearls [Internet]. StatPearls Publishing.
- 2- Cleveland Clinic. (2023, October 2). Encephalopathy: What it is, symptoms, types & treatment. Cleveland Clinic. <https://my.clevelandclinic.org/health/diseases/encephalopathy>
- 3- Vigilyze.who-umc.org. 2026. [online] Available at: <https://vigilyze.who-umc.org/>
- 4- Hamdan, A., & Al-Ayyubi, R. (2022). CARBAMAZEPINE-ASSOCIATED HYPERAMMONEMIC ENCEPHALOPATHY (HE). Chest, 162(4), A696.