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# QUALITY OF CARBAMAZEPINE IN RESOURCE-LIMITED SETTINGS: ANCILLARY RESULTS FROM THE QUAEDAF (QUALITY OF ANTIEPILEPTIC DRUGS IN SUB-SAHARAN AFRICA) STUDY

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Purpose:
Epilepsy is a common disorder affecting 70 million people worldwide, with 90% in resource-limited countries. in these countries,few standard antiepileptic drugs (AEDs) are used and concerned with quality issues. Often, the attention is focused on assay of active ingredient (AI). However, other pharmaceutical parameters are important, such as the dissolution profile that could be influenced by environmental factors. The main objective was to assess the stability of AEDs under stressed conditions.
Methods:
This study has been performed on 8 solid formulations of carbamazepine. Eight were gathered on the field in Madagascar (4 manufactured in China, 1 in India) and three manufactured in Europe were purchased directly from the manufacturer. The samples were exposed during three months to: i) 45°C+75.0% of relative humidity (RH) and ii) 45°C+99.9% RH. Assay of AI (by liquid chromatography and UV detection), dissolution and chemical stability measured by attenuated total reflection-Fourier transform infrared spectroscopy and differential scanning calorimetry were performed at T0 (baseline), one (T1) and three months (T3).
Results:
The assay of AI were successful for all the samples within the three months. No chemical degradation of the AI has been observed between T0 and T3. The dissolution profile was unsatisfactory for all samples from India and China, with a final proportion of dissolution ranging under 73.3% to 3.2% (Norms: 75−100%). At T0, all samples showed the presence of the anhydrous polymorphic form III of carbamazepine. At T1 and T3, a dihydrate polymorphic form has been observed in sample from China and India.
Conclusion:
The modification of dissolution behaviors was due to the polymorphism of the carbamazepine. These results have shown that an inhomogeneity of manufacturing process could lead to inefficient product unable to release the AI, but further analyses will have to be performed to strengthen our conclusion.
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