EVALUATION OF THE PHYSIOCHEMICAL STABILITY OF DIFFERENT FORMULATIONS OF DIAZINON 50 WITHIN ITS SHELF-LIFE

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ABSTRACT

Pesticide formulations can undergo chemical and physical changes on storage. The physiochemical stability of the product has been of exalted concern to the efficacy and safe use of the product within its shelf life. A laboratory evaluation to determine the physiochemical stability of Diazinon emulsifiable concentrate, emulsion oil in water and granule formulations within its shelf-life was conducted. The physical and chemical parameters of the respective formulations were assessed as a function of time at room temperature and after storage at 54°Cfor 14 days. The analysis was performed as per the CIPAC standard protocols and in accordance with FAO and WHO specifications. The results revealed physiochemical instability in EC formulationswas affected by time units and temperature. A marked variation in pH and active ingredient (a.i.) were apparent in EC formulations of 12-18 months old and >24 month old, and obtained from local manufacturers were apparent. A mean a.i. of 429.34 at mean pH 3.3was registered with 12-18 month old sample and a mean a.i of 249.80 at mean pH 2.2 was registered with >24month old sample. Emulsion oil in water formulations comply with specifications in pH, density, specific gravity and emulsion stability in spite ofthe slight differences shown. Wettability and persistent foaming of granule samples were in conformity with the WHO specifications. Granule sample of time unit 3 recorded a decrease in pH recording a mean value of 6.1. Despite the EC samples of time unit 3 and 5, stability of the active ingredient content evaluated for all 3 Diazinon formulations used in study were in agreement with the specifications with time units within its shelf-life. However significant difference in active ingredient content was recorded in all formulations used in the study after storage at 54°C which shows light for the formation of toxic impurities.

Key words: Diazinon, Physiochemical stability, Shelf life, EC formulation, EW formulation, GR formulation