

Design a new method to study photo-degradation of dacarbazine in aqueous solution

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Background and Aims: The present study was designed to evaluate photo-degradation of Dacarbazine (DTIC), a photo unstable anti-cancer drug ,in aqueous solution by using UV-spectroscopic and chemometrics methods. Unfortunately, previous studies were done by HPLC method that was expensive and time-consuming. Moreover, the samples need to be frozen for analysis procedure and it could be degradated during this process.

Methods: The commercial formulation of DTIC was reconstituted with deionized water to concentration of 0.04 mg/ml then it was exposed to indoor light that is combination of fluorescent and UV light for 4 hours. In order to protect the samples from photo-degradation, all the procedures were done under sodium light. The samples were placed in a light box 20 cm away from light source and immediately were analyzed by UV- spectrophotometer.

Results: The fresh reconstituted solution has max 322 nm .After being exposed to light the absorbtion decreased and new stable photo-product was formed with max 236 and 275 nm .What's more, this new compound was colourless.

Conclusions: This new method is time-saving and accurate enough to distinguish the process of photodegradation. In this study we found at least two Photo-degraded products -products. Moreover, It will be possible to study the kinetic of this photo-degradation reaction. At this time we are doing several experiments to validate this method.

Keywords: Dacarbazine; Chemometrics; UV-spectroscopy; Photo-degradation; DTIC