MICROWAVE FREEZE-THAW TREATMENT OF INJECTABLE DRUGS: A REVIEW OF THE LITERATURE FROM 1980 TO 2014

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Background

Microwave freeze-thaw treatment (MFTT) of injectable drugs can support the development of centralized intravenous admixture services (CIVAS). The aim of the review is to collect information and results about this method.

Methods

A systematic review of the scientific literature about drug stability studies was made. The data are presented in a table and describe name of the drug, producer, final concentration, temperature and time of freezing storage, type of microwave oven, thawing power, method of dosage and results after treatment or final long-term storage at 2-8°C.

Results

From 1980 to 2014, 63 drugs (anti-infectious, cytotoxics, antiemetic, pain treatment, ...) were studied by MFTT and the results were presented in 52 publications. 41 papers were presented by 8 teams ([2 to 21 by team]). The temperatures of freezing storage vary from -70°C to -15°C, the time storage from 4 hours to 12 months, the thaw from low to full power. Dosage are many made by High-Performance Liquid Chromatography. Most of the 63 drugs are stable during and after treatment. However, ampicillin needs very low storage temperature from -30°C to -70°C, efavirenz temperature storage lower than -20°C and ceftriaxone -30°C. Only 3 teams have tested the long term stability after MFTT, the first for ganciclovir after 7 days, the second for ceftriaxone after 30 days and the third for 28 drugs after 11 to 70 days.

References

- Hecq JD, Vanneckbergen D, Jamart J, Galanti L. Physico-chemical analysis of several injectable drugs in ready-to-use infusion after microwave freeze-thaw treatment and final storage at 5±3 degrees Annales Pharmaceutiques Francaises 2011 ;69: 219-216.

Conclusion

- This review can help CIVAS to take in charge the productions of ready-to-use injectable drugs.