

EOSIN WITH ZINC COMBINATION FOR THE TREATMENT OF DIAPER RASH. A STABILITY STUDY

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Background

The babies will likely encounter a diaper rash (DR) in the first years of life. There are commonly ointments used in the topical treatment of exulcerative skin lesions like DR in neonates, namely hydrocortisone cream (1%), zinc oxide and eosin. The roles of zinc in dermatology are important, zinc salts such as zinc oxide, have been applied topically to facilitate wound healing and produce a fast relief of the skin rash. No physical or chemical stability studies have been conducted to date in order to check the conditions and maximum storage time in which a combination of eosin and zinc oxide could be safely kept.

Purpose

To evaluate the physical and chemical stability of a mixture of eosin and zinc oxide used in the treatment of DR in neonates by Proton Nuclear Magnetic Resonance (¹H-NMR) spectroscopy.

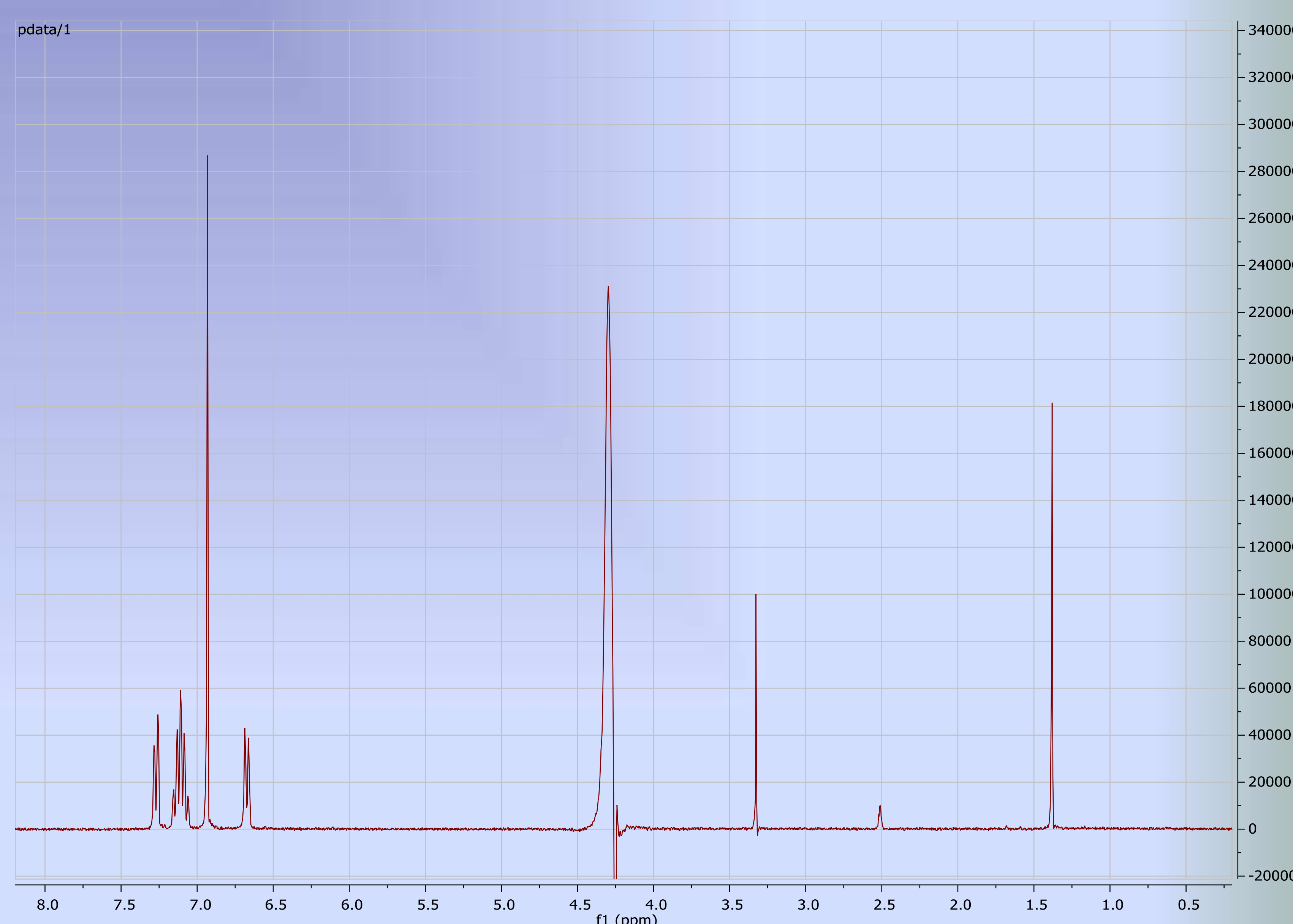
Material and methods

A mixture of 2% aqueous eosin and zinc acetate was prepared. The mixture was packed in stored in opaque glass bottles. Bottles were stored at 23°C for a total period of 30 days in a digitally controlled temperature chamber. The physical parameters monitored were, clearness, color and the formation of particulate matter. The pH variation was also determined. Chemical stability was determined by ¹H-NMR spectroscopy. The NMR spectrum of the reference eosin was acquired.

Spectroscopical signals were interpreted and assigned to the chemical structure of eosin, and then consecutive spectra were acquired at days 1, 14 and 30. Signals obtained in these experiments were compared with those of the reference compound. All spectra were acquired using a Bruker Avance DRX 300 MHz® spectrometer.

Results

Over the 30 days, the clear and colorless solution remained. No precipitate was formed and the pH did not change over time. The NMR signals remained also unaltered during the 30 days period at the selected temperature of storage. No additional new peaks due to degradation by-products were shown.



Conclusions

An aqueous 2% eosin and zinc acetate mixture preserved in opaque glass bottles remains stable for up to 30 days at room temperature. Therefore, this mixture could be a therapeutic alternative for the treatment of DR.

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