Examples of dried blood spot sampling and analysis to improve paediatric medicine

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OVERVIEW

• Liquid-chromatography mass spectrometry with selected ion monitoring (LC-MS/MSIM) methods were developed and validated to determine captopril and dexamethasone in dried blood spots (DBS).
• This was investigated as a means of measuring target drug levels from neonatal patients to explore the possibility of producing paediatric pharmacokinetic (PK) and bioequivalence data to ensure optimum drug dosing regimens.
• Drug stability in the method was also investigated.

APPLICATION TO NEONATE PATIENT DBS SAMPLES

• Heel prick DBS sample taken from neonate patient 1 hour post administration of 5mg/kg captopril orally.
• Captopril levels calculated to be: 88ng/ml in whole blood or 1.8ng in DBS or 7μg/kg body weight.
• Pilot DBS and plasma comparison studies based on a single 25mg oral dose of captopril, in one of three paediatric formulations, were carried out using adult volunteers to assess bioequivalence of formulations (Fig. 3).
• A PK profile was generated from DBS samples obtained from a neonate patient administered a 10 day tapering dose of dexamethasone.
• This was compared to the predicted PK profile for dexamethasone in preterm neonates (Fig. 4).

REFERENCES


ACKNOWLEDGEMENTS

• NIHR NEAT grant FSE008