O2.1

An Assessment of the Vitamin B_{12} Status of Nursing Home Residents in southern Tasmania

Corinne Mirkazemi(1), Gregory Peterson(1), Peter Tenni(1), Shane Jackson(1)
(1) University of Tasmania, Hobart, Tasmania

Objective. This study aimed to determine the prevalence of diagnosed and undiagnosed vitamin B_{12} deficiency in southern Tasmanian nursing home residents, estimate the overall rate of deficiency in this population and to identify risk factors associated with deficiency e.g. age, medications.
Methods. Six nursing homes consented to be involved in the study, allowing access to residents' files. The serum B_{12} levels of 130 nursing home residents not prescribed vitamin B_{12} supplementation were tested. Fifty-four recent (≤6 months) results were obtained from residents' files.
Results. Serum B_{12} levels were tested for 130 nursing home residents, of whom eighteen (14%) were deficient (<150pmol/L), forty-seven (36%) were equivocal (150pmol/L to 250pmol/L) and sixty-five (50%) had normal serum B_{12} levels (>250pmol/L). Of the 586 residents at the homes involved, fifty-six (10%) were prescribed vitamin B_{12} supplementation. Age correlated with an increased risk of developing deficiency, however the absolute difference in the median age of deficient/non-deficient residents was only 3 years ($p=0.0235$). The use of an anti-psychotic, multivitamin or statin was associated with altered serum B_{12} levels (-28pmol/L, $p=0.0201$, +135pmol/L, $p=0.002$ and +53pmol/L, $p=0.002$ respectively).
Discussion. Based on the use of prescribed vitamin B_{12} supplementation, the prevalence of diagnosed vitamin B_{12} deficiency was found to be 10% in the nursing homes involved and the prevalence of undiagnosed deficiency was 14%. The overall estimated prevalence of vitamin B_{12} deficiency in southern Tasmanian nursing home residents was 26%. By this estimation vitamin B_{12} deficiency is markedly under-diagnosed in Tasmanian nursing home residents, with over half of deficient residents undiagnosed. These residents may be experiencing a range of symptoms including anaemia, osteoporosis, dementia, sensory disturbances and depression. The use of a multivitamin supplement was associated with significantly increased serum B_{12} levels, indicating it may be a useful tool both in the prevention and treatment of vitamin B_{12} deficiency.

O2.2

Influence of viscosity of *in situ* gelling microemulsion templates on entrapment and release of FITC-Ova containing poly(alkylcyanoacrylate) nanoparticles

Rinku Singh, Sarah Hook, Thomas Rades, Anja Graf
School of Pharmacy, University of Otago, Dunedin, New Zealand

Objective: This study investigated the influence of viscosity of microemulsion (ME) templates on the entrapment and release behaviour of FITC-Ova containing nanoparticles formed *in situ* in the ME. The ME templates transform into a liquid crystalline system (LC) upon aqueous dilution. The hypothesis was that a difference in composition and viscosity of the ME template may influence the polymerisation rate of alkylcyanoacrylate and thus affect drug entrapment and further release of the nanoparticles.
Methods: The ME components comprised of isopropyl myristate, Epikuron 200, capryl caprylyl glucoside, ethanol and water. The MEs were selected along a surfactant: water (S: W) = 9:1 cut and a surfactant: oil (S: O) = 5.2: 4.8 cut of the phase diagram. Formulations were loaded with FITC-Ova and used as polymerisation templates for the preparation of poly(ethylcyanoacrylate) nanoparticles by interfacial polymerisation. The viscosity of ME and LC with nanoparticles was determined using a rheometer. A fluorometric assay was used to determine entrapment and *in vitro* release of FITC- Ova.
Results: The viscosity of the MEs and the LC formulations was higher for ME along S: O cut as compared to ME samples along the S: W cut. The entrapment of FITC-Ova in nanoparticles was higher for samples along the S: W cut as compared to the S: O cut. The release of encapsulated FITC-Ova in ME and LC gels was higher form samples along the S: W cut as compared to the S: O cut. Further the release of encapsulated FITC-Ova in LC gels was comparatively slower than from ME samples along both the S: W and S: O cut of the phase diagram.
Discussion: ME formulations with higher viscosity lead to a lower entrapment and slower release rate of FITC-Ova along the S: O cut of the phase diagram compared to the S: W cut.