Efficient formulation for PET radiopharmaceuticals using solid phase extraction

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Abstract

Solid phase extraction (SPE) was used for the formulation of several radiopharmaceuticals. The products of the reaction are transferred by passing mobile phase to a semi-preparative HPLC system. The HPLC fraction containing the purified radiopharmaceutical was collected in a reservoir containing water for injection (15–30 mL) The diluted solution was passed through Sep Pak C18 or ENVI-Carb cartridge and the trapped the radiopharmaceutical was washed with 15 mL of water for injection, elution of the radiopharmaceutical with 0.6 mL of ethanol into 5 mL of sterile isotonic saline solution This solution was then dispensed through a 0.22 μm sterilizing filter into a 30 mL sterile pre-crimped septum-sealed vial containing 15 mL of sterile isotonic saline solution. The addition of 2.5% (v/v) ethanol to the radiopharmaceuticals composition was evaluated to determine if the solubility of the non-radioactive radiopharmaceuticals was sufficient to avoid the potential of precipitate formation In all cases, a high radiochemical purity (>95%), organic solvent levels in the injectable solution were below the recommended limits. The SPE formulation proceeds with high yield, allows mild treatment of volatile molecules and heat sensitive compounds. This fast (6-8 min.) and easy to automate process can be considered as an alternative to the conventional methods (rotary evaporators).