This work aims to evaluate the possible impact of interactions between bevacizumab solutions and an implantable port equipped with a silicone or a polyurethane catheter after infusion through a complete infusion set-up in simulated use conditions (Tokhadzé et al. 2019).

Abstract:

This work aims to evaluate the possible impact of interactions between bevacizumab solutions and an implantable port equipped with a silicone or a polyurethane catheter after infusion through a complete infusion set-up in simulated use conditions. Physico-chemical and structural stability of bevacizumab solution was assessed by visual examination, subvisible particles counting, dynamic light scattering, size exclusion chromatography and ion exchange chromatography. Mechanical properties of the catheters were evaluated by measuring Shore A hardness, strain at break, strain at stress and Young’s modulus. The physico-chemical surface state of the catheters was assessed by FTIR-ATR spectroscopy, scanning electron microscopy (SEM) and by water contact angle measurement. The analysis of the bevacizumab solution did not highlight any signs of instability or loss of active substance. Mechanical properties of both materials remained unchanged after the infusion. During material analysis, a decrease in water contact angle observed after infusion and was more pronounced for polyurethane catheters than for silicone, possibly due to bevacizumab adsorption or possible leachable extraction from the materials. Surface modifications were also noted at SEM. This study did not highlight any modifications that could alter the quality of the bevacizumab infusion, nor of the infusion catheter in polyurethane or silicone, despite a modification of surface hydrophilicity. Even if after a single infusion, implantable ports remained safe to use, they aim to be used for several infusion of various drugs during their lifetime, and further studies are needed to assess the impact of repeated infusions.

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