permeation studies. METHODS: Excipient substitutions were screened. The most stabilizing formulation was chosen. Standard dilutions of bevacizumab, ranibizumab and aflibercept were prepared in PBS, manufacturer's formulation, and the new formulation. Analysis was by SE-HPLC and ELISA. Stability, disaggregation and preexposure tests were studied. RESULTS: When Avastin, Lucentis and Eylea are diluted in PBS or manufacturer's formulation, there is a 40%–50% loss of monomer concentration and drug activity. A formulation containing 0.3% NaCl, 7.5% trehalose, 10 mM arginine and 0.04% Tween 80 at a pH of 6.78 stabilized the mAbs and minimized the drug loss. The formulation also disaggregates mAb aggregation while preserving the activity. Degassing the formulation increases recovery. CONCLUSIONS: We developed a novel formulation that significantly stabilizes mAbs under unfavorable conditions such as low concentration or body temperature. The formulation allows for tissue permeation experimentation. The formulation also exhibits a disaggregating effect on mAbs, which can be applied to the manufacture/packaging of mAbs and bioassay reagents.

Grammen, C. et al. (2014). "Development and in vitro evaluation of a vaginal microbicide gel formulation for UAMC01398, a novel diaryltriazine NNRTI against HIV-1." *Antiviral Res* 101:113–121.

Diaryltriazines (DATAs) constitute a class of nonnucleoside reverse transcriptase inhibitors (NNRTIs) that are being investigated for use as anti-HIV microbicides. The aim of the present study was (1) to assess the biopharmaceutical properties of the DATA series, (2) to select the lead candidate as vaginal microbicide and (3) to develop and evaluate gel formulations of the lead candidate. First, the vaginal tissue permeation potential of the different DATAs was screened by performing permeability and solubility measurements. To obtain a suitable formulation of the lead microbicide candidate, several hydroxyethylcellulose-based gels were assessed for their cellular toxicity, stability and ability to enable UAMC01398 epithelial permeation. Also, attention was given to appropriate preservative selection. Because of its favourable in vitro activity, safety and biopharmaceutical profile, UAMC01398 was chosen as the lead microbicide candidate among the DATA series. Formulating UAMC01398 as a vaginal gel did not affect its anti-HIV activity. Safe and chemically stable gel formulations of UAMC01398 (0.02%) included a nonsolubilizing gel and a gel containing sulfobutyl ether-beta-cyclodextrin (SBE-betaCD, 5%) as solubilizing excipient. Inclusion of SBE-betaCD in the gel formulation resulted in enhanced microbicide flux across HEC-1A epithelial cell layers, to an extent that could not be achieved by simply increasing the dose of UAMC01398. The applied rational (pre)formulation approach resulted in the development of aqueous-based gel formulations that are appropriate for further in vivo investigation of the anti-HIV microbicide potential of the novel NNRTI UAMC01398.

Gupta, V. et al. (2011). "Reduction in cisplatin genotoxicity (micronucleus formation) in non target cells of mice by protransfersome gel formulation used for management of cutaneous squamous cell carcinoma." *Acta Pharm* 61(1):63–71.

Cisplatin-loaded protransfersome system was prepared and characterized for in vitro drug permeation, drug deposition and antitumor effect. A histopathological study and a genotoxicity study were also done. The skin permeation data of cisplatin from protransfersome gel formulation revealed 494.33 ± 11.87 μg/cm^2, which