Introduction
Non-healing wounds contain elevated levels of neutrophil elastase and matrix metalloproteinases (MMPs) which are responsible for the degradation of extracellular matrix and growth factors [1-3]. These destructive processes prevent wound closure and lead to persisting wounds. The binding of these proteases contributes to the treatment of chronic wounds. The aim of this study was to compare the binding capacity of two polyacrylate-superabsorber dressings for PMN elastase and MMP-2 in vitro. Polyacrylate-superabsorber containing wound dressings are able to take up large quantities of exudates while keeping the wound environment moist; an additional binding of matrix degrading proteases would be a beneficial attribute.

Material & Methods
Samples of the dressings SAP (Vliwasorb® / Lohmann & Rauscher) and SAP Pro (Vliwasorb® Pro / Lohmann & Rauscher) were cut (0.5 cm2), taken in a final volume of 1 mL of protease solution (PMN elastase: 250g/mL; MMP-2: 4000pg/mL), and incubated up to 24h at 37°C. The concentrations of unbound protein in the supernatants were determined by specific immunoassays for PMN elastase and MMP-2. In addition, it was checked if proteases can be eluted from the dressing samples subsequently.

Results
SAP exhibited a high binding capacity for both proteases tested. After 24h of incubation PMN elastase concentrations were significantly reduced about 95% (p<0.001) and MMP-2 amounts completely abolished (100%, p<0.001). Subsequently, only marginal amounts of elastase and MMP-2 could be eluted from the samples after incubation. SAP Pro demonstrated a comparable high binding of PMN elastase and MMP-2. No distinct differences in the performance of the dressings were noted.

Conclusion
The polyacrylate superabsorber dressings SAP and SAP Pro are able to shortly bind large amounts of PMN elastase and MMP-2 in vitro. Elution of the wound dressing samples revealed a strong, possibly irreversible binding of both proteases. The decrease of these matrix degrading proteases should aid the establishment of a physiological wound milieu in vivo and thus support the healing process.