The aim of this work was the manufacture and characterisation of novel chemically cross-linked mucoadhesive PVA-GANT hydrogels prepared by using autoclaving. Particularly, the study was focused on the physicochemical and pharmaceutical properties of these hydrogels with regards to potential applications for drug delivery and wound dressing. PVA-GANT hydrogels with different molar ratios and total concentrations of polymers in solution were prepared using a standard sterilisation autoclave. The physico-chemical properties were characterised by various techniques including IR spectroscopy, Texture Analysis and SEM and thermo-analytical techniques (DSC and TGA). Pharmaceutical characteristics were obtained in drug loading/release tests and microbiological assays. The results have shown that the properties of hydrogels (swelling degree, mechanical properties, internal structure, drug loading/release and antimicrobial properties) are very dependent on the polymer composition.
characteristics), were investigated by Texture Analyser (penetration mode) and morphology (pore size and wall thickness) was assessed by SEM. The degree of swelling was measured gravimetrically or using TGA.

**Pharmaceutical Characterisation:** Antimicrobial activity was evaluated by a disk diffusion method. Drug loading and release was measured by UV-visual spectrophotometer.

**RESULTS AND DISCUSSION**

The SEM images of swollen hydrogels display the porous structure (Fig. 1, top). Both pores size and wall thickness are directly affected with PVA: GANT proportion. Sample (1:2) exhibits larger pores, in contrast to sample (2:1).

Data obtained by IR confirm a formation of cross-link bonds between the two polymers. The peak at 1172-1177 cm⁻¹ could support the esterification reaction between the COOH group of Gant (formed after the ring opening) and the OH groups of PVA.

**CONCLUSIONS**

A quick and simple preparation via autoclave allowed producing an adhesive, chemically cross-linked and sterilised PVA-Gant hydrogel with no additional ingredients. The optimal characteristics of hydrogel suitable for particular pharmaceutical application can be achieved by variation in experimental conditions and composition of polymers.

**ACKNOWLEDGEMENTS**

Rachel Armitage and Liz O’Brien for SEM imaging.

**REFERENCES**

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