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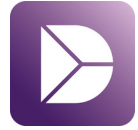

Data Article

Data concerning the protein absorption and retention properties of xyloglucan-based hydrogel film

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A R T I C L E I N F O

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A B S T R A C T

In wound dressing applications, exudate absorption and retention are important properties. The data presented here assess the ability of the crosslinked xyloglucan-poly(vinyl alcohol) hydrogel films (XG-PVA), described in “Xyloglucan-based hydrogel films for wound dressing: Structure-property relationships” (Ajovalasit et al., 2018) [1] and “Biocompatibility, hemocompatibility and antimicrobial properties of xyloglucan-based hydrogel film for wound healing application” (Picone et al., 2019), to absorb and retain proteins. These properties were investigated by Comassie blue staining and electrophoresis of Fetal Serum Proteins.

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Specifications table

Subject area	*Chemical Engineering; Chemistry; Biology*
More specific subject area	*Biomaterials*
Type of data	*Figures*
How data were acquired	*Gel electrophoresis; Proteins staining; Densitometric analysis*
Data format	*Raw, analyzed*
Experimental factors	XG-PVA *samples were incubated 24 hours with fetal bovine serum (FBS)*
Experimental features	*XG-PVA films were tested for their ability in absorbing and retaining FBS proteins.*
Data source location	*Palermo (Italy)*
Data accessibility	*Data are provided with this article*
Related research article	*P. Picone, M.A. Sabatino, A. Ajovalasit, D. Giacomazza, C. Dispenza, M. Di Carlo, Biocompatibility, hemocompatibility and antimicrobial properties of Xyloglucan-based hydrogel film for wound healing application, International Journal of Biological Macromolecules, 121 (2019) 784–795* [2].

Value of the data

- The protein absorption capacity of a biomaterial is relevant to assess the host-biomaterial interaction.
- The Comassie staining test is a simple and rapid experiment to determine the protein absorption and retention ability of a biomaterial.
- The presented data can help to evaluate new biomaterials for wound dressing.

1. Data

To evaluate the XG-PVA hydrogel film ability to absorb and retain the serum proteins, two *in vitro* assays were performed. As a first step, XG-PVA films, incubated or not with Fetal Bovine Serum (FBS), were stained with Comassie brillant blue R-250. FBS protein absorption is evidenced by the intense blue staining of the XG-PVA film (Fig. 1).

Moreover, the protein retaining film ability was demonstrated by electrophoresis analysis. Two pieces of the XG-PVA film were incubated in FBS solution. Then, one of two was washed in PBS (Fig. 2) and the loaded and retained proteins were resolved by SDS-PAGE. In Fig. 3, the electrophoretic pathways of the two samples are shown. The most intense band corresponds to the molecular weight

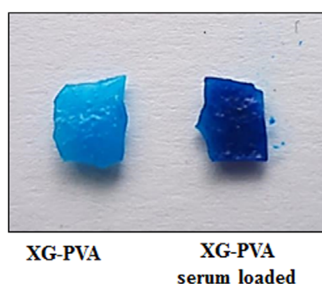

Fig. 1. XG-PVA film absorbs serum proteins. Comassie brillant blue staining of the XG-PVA film incubated (XG-PVA serum loaded) or not (XG-PVA) with FBS.

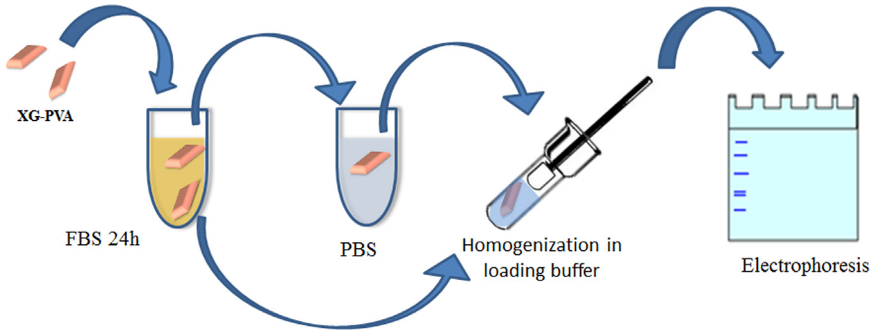

Fig. 2. Schematic representation of the experimental procedure to analyze the XG-PVA film proteins retention.

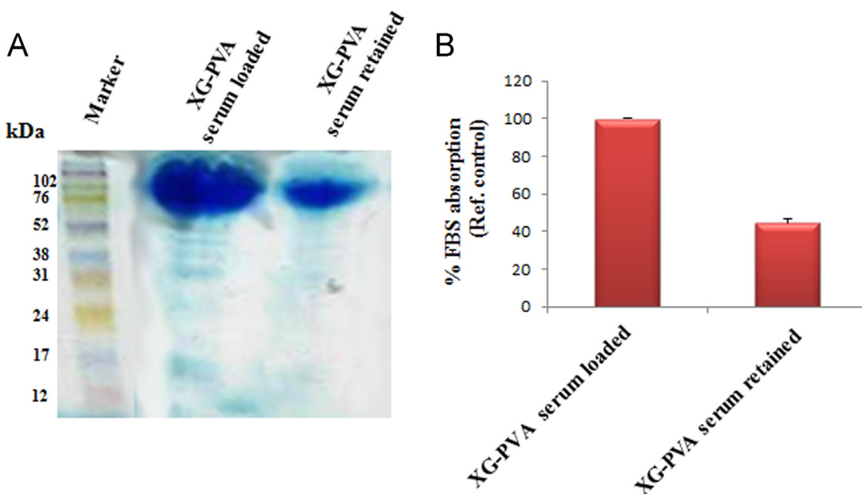

Fig. 3. XG-PVA film retains serum proteins. (A) Electrophoretic pathway of FBS proteins loaded in the film (XG-PVA serum loaded) and retained after washing with PBS (XG-PVA serum retained). (B) Histogram relative to the densitometric analysis of the serum proteins.

of albumin. Densitometric analysis indicates that about 50% of the serum proteins has been retained in the XG-PVA film after washing.

2. Experimental design, materials and methods

2.1. Serum absorption assay

XG-PVA film was soaked or not in FBS for 24 h. Successively, the samples were stained with Comassie brillant blue R-250 (0.1% Coomassie Brilliant Blue R-250, 50% methanol and 10% glacial acetic acid) for 24 h. Then, the XG-PVA films were incubated in the destaining solution (40% methanol and 10% glacial acetic acid) for 96 h.

2.2. Serum retention assay

Two pieces of the same size of XG-PVA film were soaked in FBS for 24 h. After incubation, one piece of the film was stored (control) and the other piece was placed in a paper filter funnel and washed three times with PBS. Both the samples were dissolved in the loading buffer (0.25 M Tris–HCl,

pH 6.8, 0.5 M; DTT 10%; SDS 50%; Glycerol 0.5%; Bromophenol blue 1.0%) and homogenates by potter tissue homogenizer. Successively the samples were incubated at 95 °C and resolved by 10% SDS-PAGE gel. The protein pattern was visualized by staining with Comassie brillant blue R-250 and successive destaining as described above. Band intensities were analyzed with a gel documentation system (BioRad) and the protein levels were expressed as densitometric values and percentage of the control.

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Transparency document. Supporting information

Transparency document associated with this article can be found in the online version at https://doi.org/10.1016/j.dib.2018.11.035.

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