POLYSILOSANE-POLYVINYL ALCOHOL DISCS AS SUPPORT FOR ANTIBODY IMMOBILIZATION: ULTRA-STRUCTURAL AND PHYSICAL-CHEMICAL CHARACTERIZATION

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A semi-interpenetrated polymer network of posiloxane and polyvinyl alcohol (POS-PVA) was synthesized through sol-gel process in the form of discs and used as solid support for antibody immobilization. POS-PVA discs presented a protein loading capacity of approximately 210 µg/disc and can covalently bind an anti-S100 protein antibody via glutaraldehyde. The POS-PVA matrix procedure resulted in hardered and spherical discs of uniform size, typically 4.0 mm^2. Scanning electron microscopy (SEM) analysis revealed a net uniformly formed like a porous structure. The SEM and infrared absorption spectra confirmed that the activaction with glutaraldehyde do not alter the POS-PVA discs structure and it similar format that discs before antibody immobilization.The elemental analysis of discs (POS-PVA+Glutaraldehyde+Antibody) was evaluated and the follow constitution was obtained (%): Carbon (6.57), Nitrogen (0.67), Hydrogen (4.25) and Sulphur (0.32), indicating that the antibody retains activity after adsorption. In conclusion, micro-arrays of antibody performed on POS-PVA support demonstrated sensitivity, its antibody covalent immobilization and discs synthesis involves simple steps and the reagents employed are inexpensive. These are results towards the present semi-interpenetrating polymer network as an alternative of solid support for sera assays.

Keywords: Antibody immobilization; Polysiloxane; Polyvinyl alcohol; POS-PVA discs.