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EFFECT OF SILICONE AND ACRYLIC SURFACE PRE-CONTACT WITH HEPARIN AND GENTIAN VIOLET IN *STAPHYLOCOCCUS EPIDERMIDIS* ADHESION

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Staphylococcus epidermidis is a coagulase-negative staphylococcus (CNS) that has emerged in the last years as one of the most important nosocomial and opportunistic pathogens associated with infections of indwelling medical devices such as catheters and prostheses. This is due to its capacity to adhere and to form thick and multilayered biofilms on solid surfaces becoming more resistant to antibiotics and to host defence mechanisms. In order to try to reduce bacterial adhesion and consequently to decrease the rate of infection of indwelling medical devices several approaches such as the immobilization of specific molecules on the materials surface have been employed. The purpose of this work was to find a more expedite method, using only a pre-contact of the material surface with specific molecules. Two different conditioning substances were used: heparin, a proteoglycan with strong anticoagulant activity, normally used to minimize thrombus formation, and gentian violet, a triphenylmethane dye that is normally used as a biological stain and as antiseptic agent. The materials assayed were silicone and acrylic, which are commonly used in medical devices and the adhesion of three different *S. epidermidis* strains (9142, 9142-M10 and IE186) was evaluated. Silicone and acrylic coupons were immersed in heparin or 1% gentian violet solutions for 2 hours and left to dry overnight at room temperature. Adhesion assays were performed in a static mode, in which 2 cm^2 coupons were immersed in the bacterial suspension for 2 hours. For enumeration of adherent bacterial cells, the coupons were stained with DAPI 0.1 g/l and observed under epifluorescence microscopy. The coupons with adhered cells were also observed by scanning electronic microscopy (SEM). The hydrophobicity of the materials was determined by contact angle measurements through the sessile drop technique. The results point to a significative ($p<0.05$) decrease in the number of adhered bacteria for both silicone and acrylic after pre-contact with heparin and gentian violet. The extent of adhesion of strain IE186 to acrylic pre-contacted with gentian violet was the only exception. The number of adhered cells is significantly lower in acrylic than in silicone when not pre-contacted. Possibly, this is due to the higher roughness of silicone as assessed by atomic force microscopy (AFM). No direct correlation between surface hydrophobicity and the ability of adhesion was observed. In conclusion, this work shows that immersion of acrylic or silicone in heparin or gentian violet may constitute a simple and effective method in reducing *S. epidermidis* adhesion.