

**P0786**

**Poster Session III**

**Clostridium difficile: epidemiology and outcomes**

**COMPARATIVE EFFICACY OF PERACETIC ACID AND HYPOCHLORITE ON CLOSTRIDIUM DIFFICILE SPORES**

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**Objectives**

The environment plays a key role in the transmission of *Clostridium difficile* spores from patient to patient. Improved room disinfection with sporicidal agent has led to decrease rates of *C. difficile* infection (CDI). There is a need for safe, rapid, and highly effective procedure to daily disinfect rooms of patients with CDI. We evaluated the sporicidal activity of a new detergent-disinfectant based on peracetic acid (Oxy'Floor, Anios) using a 3-stage protocol as described by Siani *et al.* (AJIC 2011, 37, 212-219).

**Methods**

The protocol measured the ability of a wipe to remove spores from surfaces artificially contaminated with a suspension of spores of *C. difficile* (~10<sup>7</sup> CFU/ml) after 10 seconds of contact. In a second step, the protocol evaluated the propensity of the wipes to release and transfer spores to other surfaces. In a third step, sporicidal activity was measured by direct inoculation of a spore suspension (~10<sup>7</sup> CFU/ml) on to wipes soaked in disinfectants.

Three different *C. difficile* strains (PCR ribotypes 027, 078 and 014) were tested on three different surfaces (steel, laminate, and vinyl polychloride). The neutralizing solution used to quench the residual activity of disinfectant was 30% polysorbate 80, 1% histidine, 3% egg lecithin and 0.5% thiosulfate sodium (DNP solution, AES Laboratoires) solution. All the experiments were done in triplicates. For each experiment, the activity of hypochlorite and Oxy'Floor were compared. Activity was expressed as the log<sub>10</sub> spore reduction of initial contamination and was compared using the paired t-test (Prism4 , GraphPad software). Significance was set at p<0.05.

**Results**

The overall ability of the wipes soaked in hypochlorite or Oxy'Floor to remove spores of *C. difficile* from inanimate surfaces was 4.53 ± 0.7 log<sub>10</sub> and 4.8 ± 0.57 log<sub>10</sub>, respectively. (p= 0.013). The efficacy was significantly better for Oxy'Floor when assays were performed on laminate (irrespective of the strains) or with the 078 (irrespective of the spore-carrier material). In presence of interferent substances (BSA 0.03%), the ability to remove spores slightly decreased and was not significantly different between hypochlorite and Oxy'Floor (4.05 ± 0.52 log<sub>10</sub> and 4.20 ± 0.52 log<sub>10</sub>, respectively, p= 0.31). The number of spores transferred by the wipes on other surfaces after a 10 second-contact with the disinfectant was significantly higher with Oxy'Floor than hypochlorite (p=0.039). The sporicidal activity measured by direct inoculation was 4.53 ± 0.74 log<sub>10</sub> and 4.69 ± 0.62 log<sub>10</sub> with hypochlorite and Oxy'Floor, respectively (p=0.13).

**Conclusion**

The activity of Oxy'Floor was at least as effective as the activity of hypochlorite on spores of *C. difficile*. Oxy'Floor might be a valuable option to control the burden of spores in the environment. It combines a cleaning and a sporicidal agent in one step.