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HIV Vif protein in docetaxel treatment of breast cancer cells

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(40%) were resistant to fluconazole. Testing voriconazole, only 2 (5%) were resistant and the great majority, 40 (95%), was shown to be sensitive to voriconazole.
Discussion and conclusions: This study showed that resistance to fluconazole is increasing and needs to be resolved quickly, since resistance in most cases was verified. However, voriconazole appears to be a good option for resistance to fluconazole, because it has been shown to be effective in the vast majority of strains resistant to fluconazole. One of the negative implications of this study is the fact that it is not possible to identify the users who have this resistance. Finally, it is important to highlight the need to produce new antifungal agents with different mechanisms of action, in addition to moderate and optimise the use of existing drugs.

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HIV Vif protein in docetaxel treatment of breast cancer cells

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ABSTRACT
Introduction: Breast cancer is one of the most frequently diagnosed cancers in the world and is also the leading cause of death in women diagnosed with this disease. Recently, APOBEC3 proteins have been identified as potent mutagenic agents of genomic DNA associated with the onset, progression and treatment resistance of various types of cancer. On the other hand, Vif1 from HIV-1 and Vif2 from HIV-2 are proteins encoded by HIV-1 and HIV-2, respectively, that during viral infection plays a crucial role in the inhibition/degradation of APOBEC3. In this work it was tested the hypothesis that both Vif1 and Vif2 mediated APOBEC3 inhibition will increase the cytotoxicity of docetaxel in a triple-negative breast cancer cell line.
Materials and methods: Breast cancer HCC1806 cell line was used as well as two new derived cell lines, with vif1 and vif2 genes integrated and expressing vif in fusion with Zs Green fluorescent protein, mentioned hereinafter simply as VIF-1 and VIF-2 cells. Cell viability assays were performed by MTT reduction after 24 h and 48 h exposure of cells (HCC1806, VIF-1 and VIF-2) to different concentrations of docetaxel.
Results: Our results in the presence of docetaxel for 24 h have shown that cell viability decreases in all cell lines around 30% or 40%. Moreover, there is no significant differences in cell viability of parental cell line HCC1806 and any of the modified lines (VIF-1 and VIF-2) at any of the docetaxel concentrations tested (p-value $>$ .05 – independent sample t-test). Additionally, after 48 h exposure to docetaxel, cell survival also decreases significantly to values between 38 and 43% (Figure 1), but again we could not see significant differences in cell viability among HCC1806, VIF-1 and VIF-2 cells treated to any tested concentration of docetaxel.
Discussion and conclusions: The hypothesis that Vif will enhance triple negative breast cancer cells sensitivity to treatments with docetaxel was not verified. The lack of effect of Vif in cells sensitivity in the presence of docetaxel may be explained by the fact that cell target of docetaxel is Microtubules and Vif proteins do not interfere with Microtubules. Probably, the presence of Vif will only alter sensibility of breast cancer cells when using drugs that affect the DNA, the known target of APOBEC3. Therefore, treatment with drugs independent of DNA seems to be also independent of APOBEC3 levels in cells.

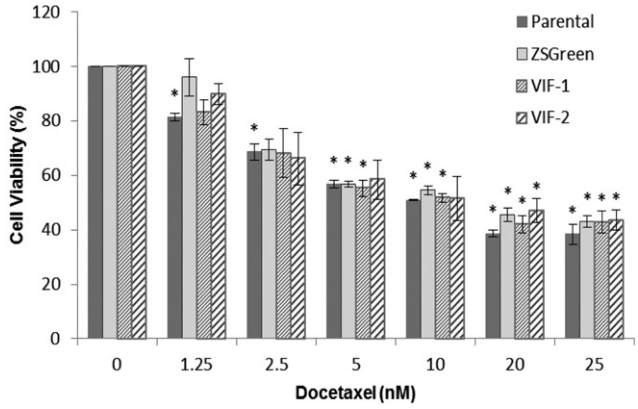

Figure 1. Viability of cells treated with docetaxel for 48 h. Untreated cells are considered to have 100% of viability. Values are present has average ± SEM of three independent MTT assays. *p-value <.05 in relation to untreated cells within the same cell line.

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Microbiological evaluation in oral health units: detection of antibiotic resistant bacteria

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ABSTRACT

Introduction: The environment in oral health care units can represent an important source of transmission of infections, which can be acquired through aerosols, bleeding, saliva and respiratory secretions [1]. It is increasingly important to prevent cross-infection in dental clinics [2]. Resistance to antibiotics is a serious public health problem. Presence of resistant microorganisms in health care units is a worrying reality, but little is known about oral health care units [3]. The aim of this study was the detection of microorganisms resistant to antibiotics at the Clínica Dentária Egas Moniz, in the dentist's chair, trays and lamp handles.

Materials and methods: Environmental samples were collected at the dental clinic with a swab. Sampling was made at trays, chairs and lamp handles, at the end of the appointments. All samples were inoculated in Trypticase soy agar (TSA), Mannitol salt agar (MSA) and MacConkey agar. All the bacteria that grew in MSA and were mannitol positive were inoculated in chromogenic agar, because we wanted to detect Methicillin resistant *Staphylococcus aureus* (MRSA).

Results: Of the 123 samples obtained in 41 working stations, only two (1.6%) lactose negative bacteria were found. One was isolated from a tray and the other from a lamp handle, in two different working stations.

We found 51 mannitol positive *Staphylococcus* samples (41.5%), were isolated from 36 different working stations, being 14 samples identified as MRSA (11.4%). These MRSA were isolated from 13 different working stations. In our study, we cannot identify if there was a preferential location for the presence of MRSA, but we found it mainly at trays and dentist's chairs.

Discussion and conclusions: There was a low contamination by *Enterobacteriaceae*. However, a percentage of MRSA isolation of 11.4% was obtained. There are few similar studies. Although, in a study where 95 surfaces from 7 different university dental clinics were evaluated, 8 MRSA were found, which corresponds to 8.4%. Comparing to our study, we obtained a slightly higher percentage.

These results demonstrate that oral health care units are also sites of contamination, where bacteria with resistance to