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Effect of Vif in doxorubicin treated breast cancer cells

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Table 1. Necessary dilutions to achieved non-toxic conditions (viability >70%).

Utilisation	Product /Whitening agent	Equivalents in H_2O_2 in the product (%)	Product dilution	Predicted [H_2O_2] to achieve 70% viability
In-office	Opalescent PF boost 40%/ hydrogen peroxide	40	1/62,500	0.0001
At-home	Opalescent PF 16% / carbamide peroxide	5.8	1/37,500	0.0001
	Opalescent PF 10% / carbamide peroxide	3.6	>1/1500	0.0004
	BBRYANCE 0.095% / hydrogen peroxide	0.095	1/100	0.0002

particular for gingivae health. Moreover, the whitening products sold for at-home use are as cytotoxic as the in-office product to be applied under the supervision of the dental professional independently of the product type. Since we found that at-home products have similar toxicities, we anticipated that the BBRYANCE gel will induce less severe effects due to his lower H_2O_2 concentration.

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Reference

[1] ISO 10993-5 Biological evaluation of medical devices – part 5: tests for in vitro cytotoxicity; 2009.

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Effect of Vif in doxorubicin treated breast cancer cells

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ABSTRACT

Introduction: Several studies linked DNA cytosine deaminase APOBEC3 to mutational process driving carcinogenesis [1]. However, APOBEC3 expression varies in breast cancer cells [2] and their role in breast cancer treatment remains elusive. The HIV-1 and HIV-2 Vif proteins are APOBEC3 specific inhibitors that recruit the host E3 ubiquitin ligase complex, inducing APOBEC3 ubiquitination and degradation in proteasomes [1]. In this work, our aim is to inhibit APOBEC3 using Vif and determine the sensibility of breast cancer cells to a non-hormonal treatment with doxorubicin.

Materials and methods: Triple negative breast cancer cell line HCC1806 was transduced with lentiviruses containing Vif-1 and Vif-2 genes in fusion with ZsGreen reporter gene producing two different cell lines named as VIF1 and VIF2 cells. Before cells treatment with doxorubicin, the expression of the fluorescent marker and Vif was confirmed by Fluorescent Activated Cell Sorting (FACS-AriaIII) and PCR, respectively. Characterisation of doxorubicin dose-and time-responsive cell viability was performed using MTT assay.

Results: High-titers of Vif-delivering lentiviruses were produced and used to transduce efficiently the HCC1806 cells. More than 99% of sorting population expressed ZsGreen indicating that Vif-1 and Vif-2 genes were integrated in genomic DNA and expressed in VIF1 and VIF2 cell lines. After treatment with doxorubicin for 24 h, all cell lines showed significant decrease of viability when compared with untreated cells, proportional to the concentration of doxorubicin (Figure 1). Comparison between cell viability of HCC1806 (parental) and VIF1 shows no difference in contrast with the behaviour of VIF2 cells that after doxorubicin treatment showed a significant increase in viability.

Discussion and conclusions: The increased viability of doxorubicin treated VIF2 cells correspond to the development of cells resistance to doxorubicin. This resistance of VIF2 cells is probably related to the APOBEC3 inhibition by Vif 2 protein. Our results raise concerns about general use of doxorubicin as breast cancer treatment, especially when APOBEC3 expression is low.

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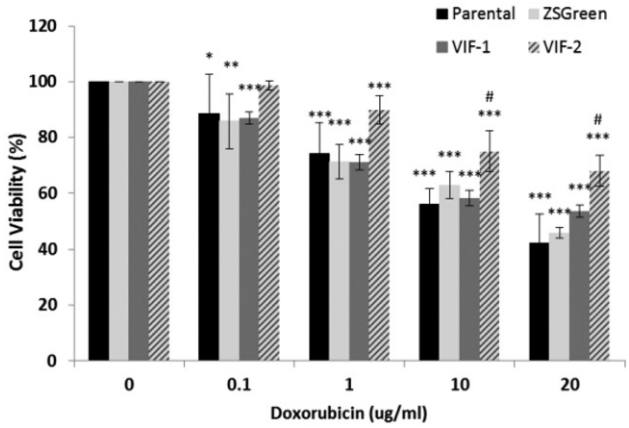

Figure 1. Viability of cells treated with doxorubicin for 24 h. Values are presented has mean ± SEM of three independent MTT assays. *p-value <.05 in relation to untreated cells from the same cell line. #p-value <.05 in relation to HCC1806 parental cell line.

Acknowledgements

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References

[1] VenKatesan S, Rosenthal R, Kanu N, et al. Perspective: APOBEC mutagenesis in drug resistance and immune escape in HIV and cancer evolution. Ann Oncol. 2018;29(3):563–572.

[2] Bandarra S, Ribeiro A, Mascarenhas P, et al. Characterization of APOBEC3 expression in breast cancer cell lines. In translational research and innovation in human and health sciences. Ann Med. 2018; 50:S25–S26.

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Evaluation of antifungal susceptibility in clinical isolates of the *Candida glabrata* complex

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ABSTRACT

Introduction: *Candida glabrata* is classified as an emerging threat due to its resistance profile to antifungal drugs. Associated to this, there is also the fact that recently, new species of *Candida* sp. phylogenetically related to *Candida glabrata* have been discovered: *Candida bracarensis* and *Candida nivariensis* [1]. Once that is only possible to identify these species through molecular methods [2], that identification represents a crucial step, since these species have been associated with a higher virulence and resistance to antifungals, in particular to the azole class [3], including the new extended-spectrum triazoles [4]. The aim of this study is to characterise *C. glabrata* clinical isolates from a culture collection.

Materials and methods: Seventy clinical isolates from the "Micoteca IUEM" were used, presumedly classified as *Candida* sp. Their phenotypic identification was performed, and all isolates classified as *Candida glabrata* were subjected to molecular identification through the PCR technique followed by electrophoresis, to verify the presence of cryptic species. Susceptibility tests were performed using the disc diffusion method in order to evaluate the susceptibility of the complex to fluconazole and voriconazole.

Results: Phenotypic identification showed that only 43 (61%) corresponded to *C. glabrata*. Molecular identification of these 43 isolates was carried out but led to inconclusive results. Susceptibility tests showed that one of the 43 samples of *C. glabrata* lost viability, 13 (31%) were sensitive to fluconazole, 12 (29%) were dose-dependent intermediates and 17