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Annals of Medicine

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/iann20

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To cite this article: J. Lopes, F. Gonçalves, J. Cabanas, I. Costa, S. Fernandes, I. Diogo, M. Pingarilho & P. Gomes (2021) Resistance associated mutations to protease inhibitors on HIV-2 infected patients in Portugal, Annals of Medicine, 53:sup1, S120-S120, DOI: 10.1080/07853890.2021.1896142

To link to this article: https://doi.org/10.1080/07853890.2021.1896142

Published online: 28 Sep 2021.

Resistance associated mutations to protease inhibitors on HIV-2 infected patients in Portugal

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ABSTRACT

Introduction: The second agent of Acquired Immunodeficiency Syndrome was identified as the Human Immunodeficiency Virus type 2 (HIV-2). This virus is endemic to West Africa, but some cases have been reported in European countries with connections to that region [1–3]. The most prevalent mutations for the HIV-2 protease region found in the literature are V47A, I50V, I54M, L90M, I82F, I84V [1]. The aim of the study is to determine the resistance associated mutations to PIs and the most prevalent, in the Portuguese population.

Materials and methods: The sample was selected from the population of patients infected with HIV-2 from the VIH-2 REGA database, from Molecular Biology Laboratory, HEM, CHLO which presented protease sequences available, being a total of 1063 sequences included in this study. Resistance mutations were identified using EU HIV-2 Internet Tool v. 08/2015, resource of HIV-GRADE e.V. Algorithm. The data collected was analysed utilising the software IBM SPSS Estatistics 25. None of the participants signed an informed consent due to the anonymity already in place in this database.

Results: In the sample of the study, the infection of HIV-2 represents only individuals infected with virus from Group A. Of the sequences analysed 546 (51.4%) are from female individuals and 515 (48.4%) from male individuals. The most prevalent mutations were L90M that was present in 211 sequences (19.8%), I54M in 133 sequences (12.5%), I50V in 82 sequences (7.7%), V47A in 77 sequences (7.2%), I82F in 74 sequences (7.0%) and I84V in 68 sequences (6.4%). According to the data collected, only 20 individuals were drug naïve to protease inhibitors for which no protease mutations were identified.

Discussion and conclusions: The guidelines for HIV-2 antiretroviral therapy in Portugal include only the use of three PIs, Darunavir (DRV), Lopinavir (LPV) and Saquinavir (SQV). With this study we were able to determine that mutations associated with high level resistance to these PIs are related with high impact on saquinavir and lopinavir, maybe because they are available for a longer time than darunavir. L90M was present in almost 20% of the samples and V47A in 7% of the sequences. Nevertheless, I50V with high impact in darunavir was also present in 7.7% of the sequences.

Due to very limited options of PIs available for the HIV-2 infection, it is of extreme importance to know the mutations present in this region before choosing a PI for an antiretroviral regimen.

Therefore, whenever possible (detectable viral load) it is extremely important to monitor resistance to PIs before starting or switching therapy for HIV-2 infected individuals, in order to achieve maximum efficacy and avoid mutations accumulation.

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DOI: 10.1080/07853890.2021.1896142

Vitamin D in liquid food supplements: are labels in line with RDA?

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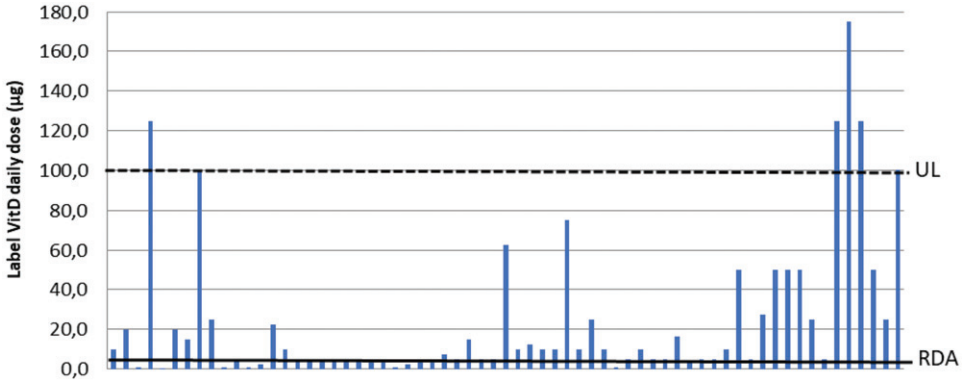

Figure 1. NIR calibration curve used to predict the amorphous fraction of OLZ.

ABSTRACT

Introduction: Nowadays, it has been observed an increase consumption in vitamins and food supplements (FS). In Portugal, in 2018, more than 2 million individuals reported the intake of these products [1]. Media has been given a particular attention to the high prevalence of vitamin D (VitD) deficiency, which may explain its highest consumption [2]. This vitamin increases intestinal calcium absorption and plays a central role in its homeostasis. Although vitD toxicity is uncommon, being a fat-soluble vitamin, excessive supplementation may result in body accumulation and toxicity [3].
The aim of this study is to evaluate if daily dose of vitamin D claimed in FS labels is in conformity with the recommended daily allowances (RDA) for this vitamin defined by European Union Directive and Portuguese legislation [4].
Materials and methods: A total of 65 FS sold in Portuguese pharmacies, health shops, supermarkets and on the internet were examined for indicated daily intake and dosage of vitamin D. Selection criteria included: oral liquid pharmaceutical forms, for adults or paediatric consumption containing vitD in its composition, as mentioned in the label, regardless of the purpose of the FS.
Results: 35 (54%) FS presented vitD label doses above RDA and six (9%) of them indicated a daily dose $\geq$ the tolerable upper intake level defined by EFSA (UL = 100 µg/day) (Figure 1).
Discussion and conclusions: VitD label dose far exceeded RDA value in most of the FS evaluated and some exceeded UL defined by EFSA.
Currently, the economic operators who place FS on the market are the responsible for the safety and the authenticity of label data. Attending that these products are often taken without any medical supervision or counselling and vitD excess may trigger adverse effects and also considering that some of these liquid formulations are for children consumption, it increases the concern about FS safety, it is imperative that the daily doses of this vitamin are reviewed in FS, in accordance to RDA values. FS should be under the same quality control of pharmaceuticals, regarding FS consumers health.

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DOI: 10.1080/07853890.2021.1896145

Are self-esteem and adult attachment affected by previous experiences of youth victimisation?

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