Title: The importance of the study of brain calcifications in patients with tuberous sclerosis complex

Author: Eraldo Fonseca dos Santos-Junior

PII: S1059-1311(18)30527-2
DOI: https://doi.org/10.1016/j.seizure.2018.08.023
Reference: YSEIZ 3271

To appear in: *Seizure*

Author: João Ricardo Mendes de Oliveira

PII: S1059-1311(18)30527-2
DOI: https://doi.org/10.1016/j.seizure.2018.08.023
Reference: YSEIZ 3271

To appear in: *Seizure*

Received date: 21-8-2018

Please cite this article as: dos Santos-Junior EF, de Oliveira JRM, The importance of the study of brain calcifications in patients with tuberous sclerosis complex, *Seizure: European Journal of Epilepsy* (2018), https://doi.org/10.1016/j.seizure.2018.08.023

The importance of the study of brain calcifications in patients with tuberous sclerosis complex

Eraldo Fonseca dos Santos-Junior[a] and João Ricardo Mendes de Oliveira[b,] *

[a] Keizo Asami Laboratory - Federal University of Pernambuco, Recife-PE, Brazil
[b] Federal University of Pernambuco, Recife-PE, Brazil

*Corresponding author:
Dr João Ricardo Mendes de Oliveira, MD, PhD Departamento de Neuropsiquiatria Universidade Federal de Pernambuco Av. Prof. Moraes Rego 1235, Cidade Universitária,Recife, Pernambuco, Brasil CEP 50670-901
E-mail: joao.ricardo@ufpe.br

It was with great interest that we read the recent publication of Meng-Na Zhang et al. in this periodical, reporting the pharmacoresistant epilepsy in patients (aged 3 months to 10 years old) with tuberous sclerosis complex (TSC) presenting calcification in the cerebral parenchyma (1). The authors concluded that calcification in the epileptic foci is one of the main reasons for this pharmacoresistance to anti-epilepsy drugs and rapamycin, an inhibitor of the mTOR signaling pathway (often overactivated in TSC).

TSC is an autosomal dominant disorder, caused by loss of function of the *TSC1* or *TSC2* gene. TSC affects various organs of the body, including mainly brain, heart, kidney, skin and lung. Recently, we have reported that calcitriol, the active form of Vitamin D, was able to restore and even increase expression of genes related to TSC, otherwise decreased in an *in vitro* calcification model (2). In addition to the gene expression results, calcitriol also decreased calcification in the cellular model studied. In another *in vitro* study, using rat mesangial cells, vitamin D3 was able to inhibit the mTOR pathway (3).

As discussed in the article, in general, about 90% of patients with TSC have epilepsy, of which, the majority is pharmacoresistant. Of the 108 patients with TSC and epilepsy, analyzed