Chemistry in life sciences

Metal ion-zeolite nanomaterials for chemodynamic therapy

Ferreira SDC[a], Carvalho VMC[a], Bertão AR[a,b,c], Rodrigues FC[a,d], Oliveira RD[d], Fonseca AM[a,e], Almeida-Aguiar C[d,e,f,g], Baltazar F[b,c], Neves IC[a,e]

a) CQUM, Centre of Chemistry, Chemistry Department, University of Minho, Campus de Gualtar, 4710-057, Braga, Portugal; b) Life and Health Sciences Research Institute (ICVS), School of Medicine, University of Minho, 4710-057 Braga, Portugal; c) ICVS/3B's - PT Government Associate Laboratory, Braga/Guimarães, Portugal; d) Department of Biology, University of Minho, Campus de Gualtar, 4710-057, Braga Portugal; e) CEB - Centre of Biological Engineering, University of Minho, Campus de Gualtar, 4710-057 Braga, Portugal; f) CITAB, Centre for the Research and Technology of Agro-Environmental and Biological Sciences, University of Minho, Campus de Gualtar, 4710-057, Braga, Portugal; g) CBMA - Centre of Molecular and Environmental Biology, University of Minho, Campus de Gualtar, 4710-057, Braga, Portugal;

Email: a87548@alunos.uminho.pt

A new therapeutic approach called chemodynamic therapy (CDT), which can be defined as specific $^{\bullet}OH$ generation in cancer cells via Fenton reactions, was recently proposed.[1] The advantages of CDT can be ascribed to the higher specificity, no external field penetration depth restriction, lower side effects in normal tissues, higher-level ROS generation, lack of equipment restrictions, and non-multidrug resistance, showing the promising future of CDT for clinical translation.[1] The varied and highly controlled structural along with the chemical properties of inorganic nanomaterials, like zeolites, make them suitable for this type of CDT. Zeolites already proved to be interesting candidates for medical and healthcare applications,[2] and also as Fenton heterogeneous catalysts for organic degradation.[3] The aim of this study was to assess the dual activity (antibacterial and anticancer) of metal ion-zeolite nanomaterials. The prepared metal ion-zeolite nanomaterials were tested *in vitro* using a human skin cancer cell line, A375, and the anti-bacterial activity was evaluated against *Escherichia coli*, *Staphylococcus aureus* and MRSA. Results obtained so far suggest that metal ion-zeolite nanomaterials could be explored as antibacterial and/or anticancer agents.

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