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New features of intracellular parasite elimination in the presence of new anti-proliferative compounds: New insights to drug development

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A wide variety of microorganisms develops and replicate on intracellular environment, being able to disseminate through the organism after these events. For this purpose, the pathogen avoid or evade many microbicide mechanism involved in cellular defense. The standard model for drug development includes the direct interaction between drug and target, but when it comes to intracellular pathogen, this strategy has been inefficient. Considering that the intracellular environment protects the pathogen, the chemotherapy against it is inefficacious or limited and can cause diverse side effects to host. Therefore, in the last years, our group has demonstrated the activity of a series of semicarbazones and derivatives compounds against intracellular parasites. The main objective of these studies was to elucidate the aspects of the parasite elimination; even it is present in either cytoplasm or vacuole, after drug administration. The use of anti-proliferative compounds, whose activity is mainly the blockage of DNA synthesis, is a distinct concept of chemotherapy. The use of compounds belonging to semicarbazones and derivatives such as thiosemicarbazones and thiazolidinones has been efficient on elimination of *Leishmania amazonensis, Trypanosoma cruzi* and *Toxoplasma gondii* at low concentrations. Initially these compounds arrest the parasite proliferation so the host cell becomes able to restore its microbicide mechanisms without show cytotoxic effects. Analyses through microscopy techniques suggest that a series of cellular events such as intracellular digestion, autophagy and apoptosis are related to parasite elimination.

Biography

Laís Pessanha de Carvalho has finished her Master degree in 2015, at age of 24 at Universidade Estadual do Norte Fluminense Darcy Ribeiro. Her studies include cellular aspects of elimination of intracellular parasites in presence of synthetic and natural compounds.

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