Therapeutic evaluation of praziquantel and quercetin in adults worms *S.mansoni in vitro* experimentation.

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Introduction: Schistosomiasis is a parasitoinfectious disease caused by worm of genre Schistosoma, it is found in several geographics areas around the world. In Brazil, schistosomiasis is in greater endemicity in the state of Pernambuco. Currently, infected people are treated by Praziquantel (PZQ), it is used as the only drug of choice. However, as PZQ-resistant strains have expansive development, the development of new therapeutics approaches is extremely important. The quercetin (QUER) is a flavonoid widely distributed in nature that provides the body with several benefits, even as: potent antioxidant, anti-inflammatory, immunomodulator, gastro and hepatoprotective. This study aims to evaluated the therapeutics effects by PZQ and QUER isolated or associated in schistosomiasis in experimentals models *in vitro.* **Methodology:** Twenty male *Swiss* mice from Bioterium of the Aggeu Magalhães Institution (IAM) were used, 28 days old, conditioned under a controlled cycle (12h light/12h dark) and maintained under diet and water *ad libitum*. The animals were infected by 125 cercariae/mL (per individual) of *S. mansoni* strain LE from the IAM Schistosomiasis Reference Service. Adults worms specimens were removed by cardiac perfusion, after 45 days, then maintained under RPMI 1640 medium supplemented with antibiotics. Then, the plates were incubated at 37°C for 2h in an oven at 5% CO2 for adaptation, being monitored every 24h and observed under an inverted optical microscope. The DMSO (dimethyl sulfoxide PA - SIGMA ALDRICH) negative control was added to the supplemented RPMI medium. In *in vitro* experiments, groups were distribuited in: I) DMSO (negative control; 0,5 µg/mL); II) PZQ (positive control; 0,5 µg/mL); III) QUER (15µg/mL); IV) PZQ+QUER (0,5 µg/mL + 15 µg/mL). These four experimentals groups were tested at different corresponding concentrations, totaling the final volume of 2mL. The work was evaluated and approved by the CEUA/IAM, under protocol No. 159/2020. **Results:** Effective results of QUER were observed in all treatment modalities, whether isolated and/or associated with PZQ. Adult worms of *S. mansoni* showed 100% mortality within 24h. In these experiments, parameters of

motility and mortality were evaluated: groups III and IV had a score of 0 in 24h, meaning total absence of movement and soft tissue damage were observed under optical microscopy. Through scanning electron microscopy, such tegumentary changes were observed structural damage caused by compounds QUER and QUER+PZQ, such as exposure of the musculature, formation of tegumentary blisters, teguments with abnormal morphology and destruction of tubers and spicules. **Conclusion:** Thus, compound poliphenolic quercetin shown to be the most promising schistosomicidal activity present against *S. mansoni* in adults worms. because showed direct action on the pathogen whether isolated and/or associated with praziquantel.

Keywords: Quercetin; Praziquantel; Schistosoma mansoni; Poliphenolic compounds.
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