Albendazole sulphoxide (ABZSO) and praziquantel (PZQ) are the most used medicine in cisticercosis treatment. They are 85% and 70% efficient respectively. This indicate that ABZSO is discreetly more effective maybe due to action mechanisms. This study was designed to evaluate the effect of PZQ and ABZSO combination in *Taenia crassiceps* in vitro model, as well as the kind of interaction between both drugs. *Taenia crassiceps* cysts (ORF strain) were obtained from experimentally infected male Balb/c mice (2 months old). The mice were killed by cervical dislocation and metacestodes were removed from the peritoneal cavity and washed several times with sterile 0.9% saline solution. Only those parasites exhibiting intact bladder surface were used for the experiments. In order to evaluate the interaction, two in vitro studies were performed: A single drug exposure study to determine the concentration that produced 50% effect (EC50) and a drug combination exposure study. In the single drug exposure study, working solutions of PZQ and ABZSO were prepared in culture medium to obtain concentrations from 0.005 to 0.040 µg/ml and 0.021 to 0.160 µg/ml respectively. *Taenia crassiceps* cysts in culture medium containing each drug were incubated at 37°C with 5% CO2 atmosphere and 98% of relative humidity. Mortality was assessed by an inverted light microscope and the criteria were: loss of vesicular fluid, paralysis of membrane and collapse of parasites. The cysts were observed every day during 11 days. In the drug combinations study, the EC50 values of PZQ and ABZSO obtained from the single drug exposure study, were used to select five concentrations of combinations. The final concentrations of PZQ + ABZSO in the culture medium were: 0.0004 + 0.0018, 0.0007+ 0.0036, 0.0014+ 0.0073, 0.0028 + 0.0145 and 0.006 + 0.029 µg/ml. The EC50 values and 95% confidence limits (CL) of PZQ, ABZSO and the PZQ + ABZSO combination (EC 50exp) were calculated by the log concentration-response curves fitted using logistic regression. Isobolographic analysis was employed to characterize the kind of interaction between PZQ and ABZSO. The ultrastructural *Taenia crassiceps* damage was assessed by transmission electron microscopy. The cysts were 2.5% guaraldehyde fixed, OsO4 post-fixed, ethanol dehydrated and EPON included. One µm sections were toluidine blue stained and ultrathin sections were uranyl acetate – lead citrate contrasted. The isobolographic analysis results shows that in vitro PZQ + ABZSO combination has additive cysticidal effect with 0.043 µg/ml CE50 value. The electron microscopy observations showed that the ultrastructure changes were more marked with the PZQ + ABZSO combination in comparison to PZQ or ABZSO alone since tissue thickness diminish 53% with PZQ, 76% with ABZSO and 96% with the combination. The cyst damage was in the global structure showing a deteriorated tissue, with diminished tegument cells. The microtriches of the tegument surface almost disappeared with PZQ treatment, and with ABZSO alone and in combination with PZQ the reduction was the same (60%), this shows that the combination has an additive effect on cyst internal structure. The additive effect could increase the treatment efficiency since the cyst regenerative capacity is diminished. This indicate the possibility of in vivo experiments to evaluate the combination efficiency.
Taenia crassiceps electron micrographs. Control (A), Praziquantel (B), Albendazole sulphoxide (C) Praziquantel and Albendazole sulphoxide combination (D). Microtriches (1); Tegument (2); Tegument cells (arrows). Uranyl acetate –Lead citrate 15, 168 X.