

Figure S1. The clinical picture of *O. niloticus* of the five different treatment groups, challenged with *A. hydrophila*: **A-** CON group, shows ocular opacity (arrow) and hemorrhagic areas on trunk and caudal peduncle regions (star). **B-** GP0.5 group shows severe fin rot of the dorsal fin (arrow), loss of scales, and hemorrhagic patches (star). **C-** GP1 group shows marked erythema of both pectoral fins (arrow). **D-** GNPs0.5 group shows severe erythema at the base of the pectoral fin (arrow). **E-** GNPs1 group shows normal appearance except for mild fin rot of the dorsal fin (arrow).

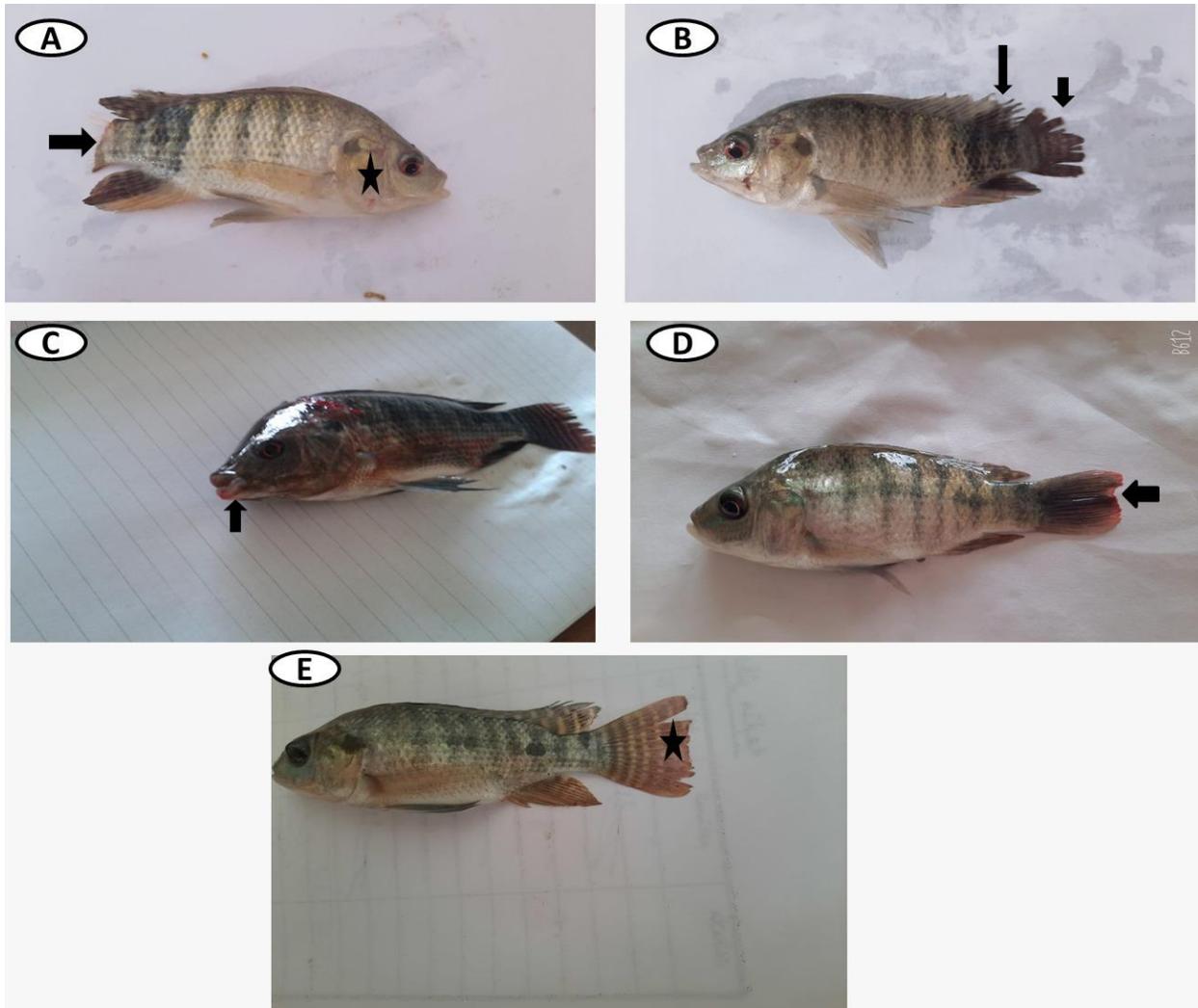


Figure S2. The clinical picture of *O. niloticus* of the five different treatment groups, challenged with *P. putida*: **A-** CON group shows the darkness of the caudal peduncle region with severe fin rot the caudal fin (arrow) and petechial hemorrhage at the operculum (star). **B-** GP0.5 group shows the darkness of the body, particularly at the caudal peduncle region, and severe fin rot of both the dorsal and the caudal fins (arrow). **C-** GP1 group shows the darkness of the whole body, erythema of the caudal fin with moderate fin rot, and mild hemorrhage at the lower jaw (arrow). **D-** GNPs0.5 group shows marked erythema of the caudal fin (arrow). **E-** GNPs1 group shows a normal clinical picture except for mild fin rot of the caudal fin (arrow).