**Survival ability, metabolic activity recovery and ultrastructural damages of Antarctic black fungus in perchlorates media**

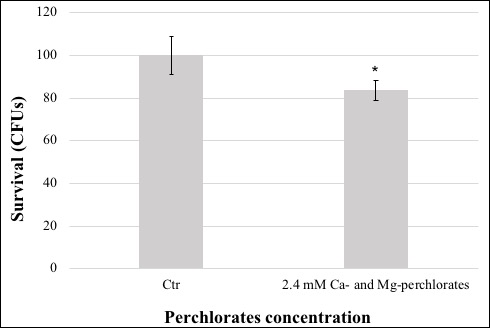
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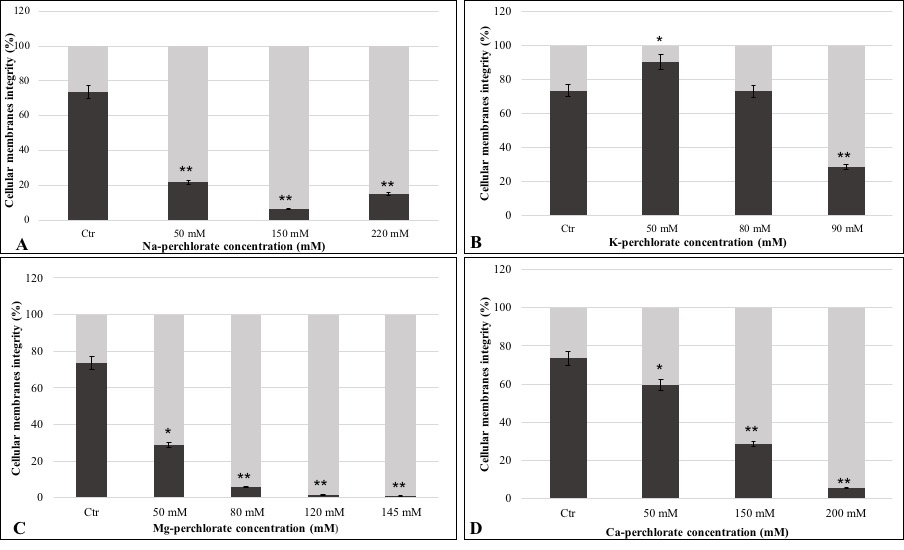
2 Human Spaceflight and Scientific Research Unit, Italian Space Agency, via del Politecnico, Rome, Italy

**Supplementary Material**

**Growth tolerance to Mars-relevant perchlorate salts**

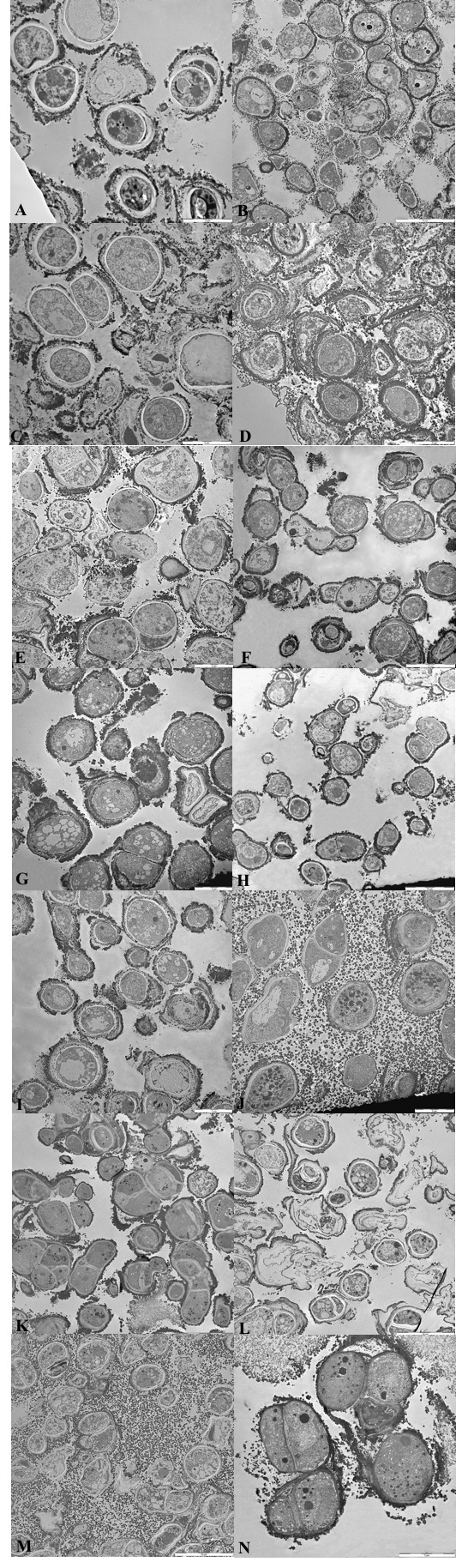
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**Figure S1.** Survival ability of *C. antarcticus* colonies after growth on 2.4 mM(0.4 wt% of Mg(ClO4)2 and 0.6 wt% of Ca(ClO4)2) cultivation medium. Significant differences were calculated by *t test* with \* = *p* < 0.05 and \*\* = *p* < 0.001.

**Cellular membranes integrity assessment (PMA assay)**

**Figure S2.** Percentage of undamaged and damaged cellular membranes measured with PMA assay coupled with qPCR of *C. antarcticus* coloniesgrown on different perchlorates concentrations. **A**) Na-, **B**) K-, **C**) Mg-, and **D**) Ca-perchlorates. All concentrations are expressed in mM. Significant differences were calculated by *t test* with \* = *p* < 0.05 and \*\* = *p* < 0.001.

**Ultrastructural investigation: TEM observations**

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**Figure S3.** TEM images of *C. antarcticus* cells grown on A, B) MEA (no salts, controls), C) 50 mM, D) 150 mM and E) 220 mM of Na-perchlorate; F) 50 mM, G) 80 mM and H) 90 mM of K-perchlorate; I) 50 mM, J) 120 mM and K) 145 mM of Mg-perchlorate; L) 50 mM, M) 150 mM and N) 200 mM of Ca-perchlorate.