

CONCLUSIONS

Enterococcus faecium strain GR7, a dairy isolate, was reported to metabolize arginine via ADI pathway. Using *in silico* computational tools, the structure and organization of *arcCBA/A2* operon in *E. faecium* GR7 was proposed. Statistical tools were utilized for optimization of ADI production at the flask level and approximately 15-fold higher yield with a final recovery of 49.17 % was obtained after downstream processing of crude cell extracts. Biochemical and mass spectrometry investigations revealed heterodimer state of active ADI protein in *E. faecium* GR7. Purified ADI showed cytotoxic effects and inhibited various cell lines to differential extents, which in future can be explored as a potent anticancer therapeutic for arginine auxotrophic cancers.