



**Figure S1.** Phase-contrast microscope images of 12 spore suspensions of *C. tyrobutyricum* strains as follows: (a) CI\_14; (b) CI\_20 (type strain; dilution 1:10); (c) CI\_29; (d) CI\_52; (e) CI\_64 (dilution 1:10); (f) CI\_80 (dilution 1:10); (g) CI\_82 (dilution 1:10); (h) CI\_84; (i) CI\_117; (j) CI\_171 (dilution 1:10); (k) CI\_188 (dilution 1:10); and (l) CI\_238. The spore suspensions are observed under 1000× magnification with oil under phase-contrast microscope. Scale bars indicate 10 μm.