QPCR quantification of plasmid copy number in recombinant *Clostridium tyrobutyricum* JM1

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Hydrogen (H_2) is an alternative energy source that is cost-effective, environment-friendly and renewable because it has high specific energy content per unit mass and produces no carbon-based emissions that contribute to greenhouse effect. Strict anaerobics have a theoretical maximum yield of 4 mol H_2/ mol glucose, which is the greatest theoretical yield. However, in practice, actual yields in processes that lead to H_2 production are lower compared to the maximum theoretical yield. To improve the hydrogen production yield, recombinant *C. tyrobutyricum* was developed using plamid pJIR418. Plasmid is frequently used as a vehicle to carry foreign genes into a host cell. The plasmid stability is essential in fermentation with recombinant systems for the maintenance and expression of recombinant genes. In this study, real time quantitative PCR (QPCR) was used to determine the plasmid copy number of the pJIR418 within the recombinant strain. The QPCR technology offers fast and accurate quantification of any target gene.