

Cold Plasma, a New Bacteria Killer- Constraint-Based Approaches †

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Abstract: Due to its unique properties, Cold Atmospheric Plasma (CAP) has found wide applications in biology and medicine. Along with its other application, CAP has shown promising activity against bacteria. It is claimed that oxidative stress caused by reactive oxygen and nitrogen species (RONS) is the main reason for bacteria deactivation. We will study iML1515 model; Escherichia coli str. K-12 substr. MG1655 with NC_000913.3 (1877 metabolites, 2712 reactions, and 1516 genes) will compare the results with our previous paper; e_coli_core model; Escherichia coli str. K-12 substr. MG1655 NC_000913.3 genome (72 metabolites, 95 reactions and 137 genes). Since the number of metabolites in the new model is away more than testing them one by one; We just focus on oxidation of metabolites in three reactions glucose exchange (EX_glc__D_e), Glucose-6- phosphate isomerase (PGI), Pyruvate dehydrogenase (PDH).

Keywords: cold atmospheric plasma; oxidative stress; bacterial inactivation; constraint-based modeling.

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Conflicts of Interest

The authors declare no conflict of interest.