ABSTRACT

The effect of (-)-epicatechin (EC) derivatives is including (-)-epicatechin (EC), (-)-epicatechin gallate (ECG), (-)-epigallocatechin (EGC) dan (-)-epigallocatechin gallate (EGCG) to rifampicin (RIF) as first line medicine of anti-tuberculosis has been studied. From preliminary research *in silico* docking studies rerank score (RS) RIF to RNA Polymerase (RNAP) receptor (1I6V) is -117,2420, while the RS value of (-)-epicatechin derivates to Fatty Acid Synthase (FAS) receptor (2VB7), namely, EC -92,994; ECG -135,821; EGC -95.458; and EGCG -125,695. *In silico* predicted that the (-)-epicatechin derivatives have anti-tuberculosis activity and is able to inhibit fatty acid synthase (FAS) in *Mycobacterium tuberculosis* and derivatives (-)-epicatechin contained in green tea is predicted can synergy with RIF as anti-tuberculosis by opening the way for RIF by changing the permeability bacterial cell membrane that is inhibit the fatty acid synthase (FAS), which are outside the *Mycobacterium tuberculosis* cells so that RIF more easily enter the cells and inhibit *Mycobacterium tuberculosis* RNA polymerase of *Mycobacterium tuberculosis*. Combination RIF and (-)-epicatechin derivatives have synergy effect as anti-tuberculosis and able to reduce Minimal Inhibitory Concentration (MIC) value of RIF. It has been found that the value of MIC RIF before combined with (-)-epicatechin derivatives is 5 ppm and after combined with EC, ECG, and EGCG, MIC RIF values into 0,5 ppm, after combined with EGC, MIC RIF values into 1 ppm. Constant improvement of lipophilic, electronic and steric and (-)-epicatechin derivatives indicates that there is no quantitative structure-activity relationship of anti-tuberculosis in linear and non liniear regression.

Keywords: (-)-Epicatechin (EC) derivatives, rifampicin, anti-tuberculosis, QSAR, in silico.