**Dissolving microneedle patches and biomacromolecule delivery**

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**ABSTRACT**

Salmonella typhimurium is a pathogen responsible for causing a wide range of
infectious diseases and is one of the major threats for human health throughout the globe1. The emergence of multi-drug resistance (MDR) in this microbe is a big challenge. The common line of antibiotics is no longer effective against such microorganisms. Therefore, in MDRsituati, the present study was aimed to identify novel drug targets and explore their potential inhibitor. In this direction, L-asparaginase is selected as a promising target because it is actively involved in the virulence mechanism of S. typhimurium. To block this virulent enzyme curcumin (a bioactive component of Curcuma longa) is examined in the present study using in silico3 and in vitro 4 methods because it is traditionally renowned for its medicinal properties. However, the pharmacological behaviour, targeting property of this phenolic compound is less understood. This serves the basis to explore the ability of curcumin and its degradation products (test ligands) to inhibit L-asparaginase (target protein) of S. typhimurium. It was found that curcumin has a docking score -5.465 kcal/mol while its degradation
product curcumin glucuronide has the lowest docking score i.e. -6.240 kcal/mol. Arg 142 and
Asn 84 amino acid residues of L-asparaginase were found to be interacting with test ligands
inside the binding pocket of the target protein. The ADME and toxicology study also indicated
the potency of curcumin and curcumin degradation products as a potent drug candidate.
The results obtained from in silico studies suggest that curcumin and its
degradation product are capable of blocking virulent L-asparaginase5. This information could be valuable for futuristic drug candidate development against Salmonella infection and could be a potential lead for the mitigation of MDR.

**Keywords:** .................................................

**Note:**

* ***Title (14 Bold font size of Times New Roman)***
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