

The behavior of silver(I) ion binding on HXXH and MXXM peptides

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Since many years, silver has been used in medicine for its antimicrobial properties. However, as for antibiotics, bacteria can develop resistance to the antimicrobial action of silver. For the *Salmonella Typhimurium* bacteria, this silver resistance is due to a silver efflux pump, composed of eight proteins which act together to export silver(I) ions, named Sil System. Among them, SilE protein is the only one with an unknown role, even if it seems to act like a silver sponge. SilE is composed by 143 amino acids (aa) and contains some histidine (His, H) and methionine (Met, M) which can bind several silver(I) ions. The study of HXXM tetrapeptides has shown that the nature of the aa "X" in between H and M influences the binding constant $\log(K_{ass})$.

Based on these observations, HXXH and MXXM tetrapeptides were synthesized to observe the behavior of Ag^+ -tetrapeptide interactions. Differences and similarities in the coordination behavior between HXXH and MXXM were noticed. Furthermore, comparisons with HXXM tetrapeptides were also done.

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