SYNTHESIS OF NOVEL MANNOSYL DERIVATIVES OF PEPTIDOGLYCAN MONOMER

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Lectins, carbohydrate-binding proteins, are very specific for monosaccharides such as mannose, galactose, *N*-acetylglucosamine, *N*-acetylgalactosamine. The formation of glycoconjugates of biologically active compounds with monosaccharides, for which specific lectins exhibit high affinity, may enhance the biological activity of compounds.

We report on the synthesis of mannosyl derivatives of peptidoglycan monomer in order to study the influence of the mannose moiety on peptidoglycan's activity. Peptidoglycan monomer (PGM) is a natural disaccharide pentapeptide (GlcNAc-MurNAc-L-Ala-D-*iso*Gln-*meso*DAP(ωNH_2)-D-Ala-D-Ala) originating from *Brevibacterium divaricatum*. In several experimental models *in vivo* and *in vitro* PGM exhibited strong immunomodulating, antitumor and antimetastatic properties. In this derivative PGM is connected to mannose through an *O*-glycosidically bonded chiral linker. The key step in the preparation of the glycoconjugate was the condensation of the unprotected PGM with *N*-hydroxysuccinimide ester of *O*-mannopyranosyloxy carboxylic acid. In the process an amide bond was obtained with the free amino group of *meso*-diaminopimelic acid in parent PGM molecule.

Both anomers of the mannose conjugate of PGM were prepared and fully characterized. They are water-soluble and non-pyrogenic substances. Further studies, including experiments in animal models, are in progress.