STRUCTURAL CHARACTERIZATION AND IMMUNE ACTIVITY OF A POLYSACCHARIDE ISOLATED FROM THE FRUIT OF *LYCIUM RUTHENICUM* MURR

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*Lycium ruthenicum* Murr. is a unique nutritional food which is widely distributed in the northwestern China. Its ripe fruits has been used for treatment of heart disease, abnormal menstruation and menopause among folks. In present study, a novel glycoconjugate, designated as LRGP3, was isolated from *L. ruthenicum*. The crude polysaccharide was obtained by hot water extraction and purified by ion-exchange and gel-filtration chromatography. Its molecular weight was 75.6 kDa determined by HPGPC. Monosaccharide composition analysis revealed that it was composed of rhamnose, arabinose and galactose in a molar ratio of 1.0:16.1:9.2. The existence of O-type carbohydrate-peptide linkage in LRGP3 was demonstrated by β-elimination reaction. On the basis of monosaccharide composition, partial acid hydrolysis, methylation analysis, ESI-MS analysis and NMR spectroscopy, LRGP3 is a highly branched arabinogalactanprotein with a backbone of (1→3)-linked β-galactosyl residues. The backbone was partially substituted at O-6 of galactose residues by arabinose and galactose residues. The branches were composed of (1→5)-linked Ara, (1→2)-linked Ara, (1→6)-linked Gal, (1→3)-linked Gal, (1→4)-linked Gal and (1→2,4)-linked Rha, and the major non-reducing termini was arabinose. The immunological assays results demonstrated that LRGP3 significantly induced the spleen cell proliferation analyzed by ³H-TdR incorporation method. In Raw264.7 macrophage cell cultures, LRGP3 significantly stimulated the release of several major cytokines at suitable doses between 25 and 150 μg/ml, demonstrating an immunomodulatory property. The results are valuable for elucidating the structure of polysaccharides of *L. ruthenicum* and for further utilising them as functional food.