Cytotoxic activities of new water-soluble polysaccharides from *Ornithugalum bungei*

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The importance of various polysaccharides as an anti-tumor agent has a long historical background [1]. *Ornithogalum bungei* Boiss. (Hyacinthaceae), is an Iranian native plant distributed in Golestan province [2]. The initial screening of cytotoxic activities of the extracts from different parts of the plant showed the promising result for the bulbs. Therefor in the present study detailed investigation of cytotoxic effects of the bulb extracts on human hepatocarcinoma cell line (HepG2), prostate cancer cell line (PC3) and Human myelogenous leukemia (K562) were carried out as well as isolation and structure elucidation the active compounds. The method was based on bio-assay guided fractionation. After each step of chromatography all fractions were assayed on the mentioned cells. Finally two new water-soluble polysaccharides, OBP_1 and OBP_2 with molecular weights of 56.2 kDa and 97.9 kDa respectively, were isolated. Purification of the polysaccharides was carried out using hot water extraction and further purification methods such as DEAE-cellulose A52 and Sephadex G-100 columns. The linkages of polysaccharides were determined by using methylation method. OBP_1 was composed of glucose (Glc), galactose (Gal), arabinose (Ara) and mannose (Man) in a molar ratio of 10.8:3.52:3.72:1.97 and OBP_2 was composed of glucose (Glc), galactose (Gal), arabinose (Ara), mannose (Man) and glucoronic acid (GlcA) in a molar ratio of 7.48:4.01:3.09:4.13:5.05. The uronic acid content of OBP_2 was about 20%. Two polysaccharides exhibited significant cytotoxic activity in a concentration- independent manner against HepG2, K562 and PC3 cells. Results suggested that these polysaccharides could be a potential natural cytotoxic agents.

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