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OXIDIZED HYALURONIC ACID, A SUITABLE POLYMER FOR TISSUE ENGINEERING AND DRUG DELIVERY

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Hyaluronan (HA) modified with an aldehyde group has been extensively used for various medical and tissue engineering applications. The oxidation of primary hydroxyl group of *N*-acetyl-D-glucosamine to the aldehyde group dramatically extends possibilities of subsequent chemical modification even at physiological conditions. Reaction of HA-aldehyde, with bis or poly amino linkers in water, led to the cross-linked, insoluble but biodegradable hydrogels, suitable for tissue engineering and drug delivery.

BETA-1,3/1,6-D-GLUCAN FROM OYSTER MUSHROOM TO PURIFIED POLYSACCHARIDE

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Beta-1,3/1,6-D-glucan is powerful natural immunomodulator isolated primarily from Oyster mushroom (*Pleurotus ostreatus*). Method of extraction and modes for improving biological and immunological properties are being discussed. Various milling/grinding techniques were tested in order to achieve very fine beta glucan particles size. Cryogenic milling at the temperature of liquid nitrogen was tested with good results; however this method proved not to be technologically effective for achieving large scale volumes. Repetitive grinding with sieving of beta glucan enables to achieve very fine particles in large scale.

NEW GENETIC RESOURCES OF SPRING BARLEY WITH WAXY STARCH AND INCREASED CONTENT OF NON-STARCH POLYSACCHARIDES

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The entries of spring barley with a different type of grain (hulless vs. hulled) and starch (waxy with a reduced amylose/amylopectin ratio and standard with normal one) were developed on the basis of hybridization among hulled productive cultivar Nordus, line No94609D7 and waxy Canadian cultivars CDC Candle, HB 803 and Merlin. Selected lines (28) with productive phenotype and high content of non-starch polysaccharides (NSP) were tested at two locations (Kroměříž, Žabčice) in the period 2008–2011. The mean content of β-glucan (BG) in grain varied in individual new lines from 5.1 % to 10.8 % and arabinoxylan (AX) from 3.8 % to 6.7 %. Due to high variability in the growing conditions yield differences within the whole set were not significant even though the most productive new lines overyielded the waxy cultivars by as much as 23.1 %. In the selected lines, a positive change in generally valid negative relationships between agronomic traits (grain yield, TKW), content of N-subst. and percentage of NSP was confirmed. New genetic resources with waxy starch type, hulless or hulled grain, yield on a level of productive parents, high content of BG and the lowest variability in experimental growing conditions have been transferred to the Genebank of the CR for exploitation in further investigation and breeding of new barley varieties for food processing.

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**ENZYMATIC EXTRACTION, QUANTIFICATION
AND STRUCTURAL CHARACTERIZATION
OF β -GLUCANS FROM SPECIFIC MUSHROOMS
(FRUITBODIES AND MYCELIA CULTURES)**

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Here, we present a new enzymatic extraction method for β -glucans with chitinase, glucanase and a mild alkaline extraction. For further evaluation the new enzymatic method was compared with an alkaline/acid method. Structural characterization including monosaccharide analyses with GPC, GC and NMR of the enzymatic isolated glucans mainly revealed the typical β -1.3-1.6-glycosidic linkages together with other α - and β -glycosidic linkages.