Polysaccharide biotechnology assignment

Technology

One would not have thought that even though the basis of polysaccharides are from highly similar building block of furans carbohydrate ring structure or paragons, its potential biotechnological application are vast given its variety of functional and structural properties. Unlike protein, polysaccharide are usually homemakers made from hoses or pentose residues. One example of homopolysaccharldes or single type of sugar Is cellulose while hydroelectricity’s with two or more sugars Is guar gum which consist of manses and calaboose.

Structure of homopolysaccharlde (Foster 2013) Some of the reasons responsible for variety in polysaccharide structure is its hydrodynamic properties where branded chain are common and also the manner of hoses and pentose linkage which contributes to different chain formation. Structural polysaccharide are polysaccharide that are involves in forming the structure of organisms such as cellulose in plants and chitin in insects and crabs.

Pectin is a structural polysaccharide mainly found in the primary cell walls of terrestrial plants where they contribute to physiological processes such as cell differentiation and cell growth. Pectin extraction can be done by enzymatic extraction here there are four mall enzymes that can act on It. The first one is pectin Ease that make bonds cleave between intergenerational residues. Peculate hydroplanes breaks the –> 4) glycoside bonds of both carbonyl-rich and stultified pestles. Acculturation acid is the product of the ex.-enzymes at the end of the chain.

Another enzyme pectin castrates removes methyl groups. This is an important component industrially because gelatin properties of pectin relies on level of stratification and the pectin production are manipulated in order to get a variation of pectin with various degree of stratification. The manipulation process are done by controlling alkali hydrolysis (Tombs and Harding, 1998). The most viable alternative of pectin source is from the peel of citrus fruits and apple pomade (residues of pressed apples from cider production). Both of these are leftovers from juice production industry.

Acculturation acid which Is the major constituent of pectin linked together In forming long chain polycrystalline acid molecule. When a certain number of -COHO groups are mentholated, It gives an Impact to the properties of pectin especially In Industrial process. Pecan Is widely known In the production of Jams, preserves and Jellies to set rut products which can be made at home or at a commercial basis. Is a polysaccharide consist of a linear chain of hundreds or thousands of –> 4) linked C)-glucose units. It plays an important role in the paper-making industry as well as a main structural component in textile fiber.

Cellulose have little or no function for the food industry since the cell call component are unable to be broken down by human digestive system. However, there had been an interest of its usage as fiber in the human diet. In the paper making process, celluloses pulp is obtained from raw materials by means of mechanical and chemical. Example of mechanical means is by separating the fibers by applying mechanical energy and breaking the bonds between fibers and releases the fiber bundles, fiber fragments and single fibers.

The mixture of fiber fragments and fibers makes the pulp a favorable printing properties. Chemical pulping main objective is to remove most of the non- cellulose wood components while making sure a high percentage the cellulose fibers are intact. One interesting process in paper making is the De-inking process which involves the usage of celluloses and homelessness in order to release the ink particles. The enzymes works by attacking the surface of the fibers thus releasing the ink particles by detaching the residues to where they are bound.

The sea had long been considered to be a home for hidden treasure of different species. It is also home to various types of macrophage or seaweeds which is a marine polysaccharides. Seaweed polysaccharides include, carrageen, officious, agar and alginate collectively known as physiologic. Due to their commercial importance, specific seaweed species are farmed throughout the world. Alginates contain high percentage of carboxylic groups which facilitates in the binding of water (Tombs and

Harding, 1998). Different species of the seaweeds produce alginates with different chemical composition. Manipulation of viable cells in alginate gels is a widely used technology in industrial and biomedical applications. Cells that are immobilizers in alginate gels have the ability to maintain its viability through long-term culture because of the mild environment of the gel system. The gelatin process is usually manipulated with the presence of calcium ions process known as the egg-box process.

Other uses of alginates are as a gelling and thickening agents in the food industry and as thickening agents in the paper and textile industries.

Chitchat is known for its biodegradability, absorbability and non-toxicity as well as their gel forming and antimicrobial properties. It is produced by partial declaration of chitin with chemical (Noah) or enzymatic methods. The N-acetylene group in chitchat is replace with NH in various degrees where the properties can be manipulated by manipulating the degree of activation which makes it exciting to be use industrially.

Besides alginate, chitchat can also be utilized in entrapment of microbes, mammalian cells, enzymes and plant cells in gel beads (Tombs and Harding, 1998). It has been proven that chitchat combined with alginate, carrageen or carboxymethylcellulose provides a more stable entrapment process. Chitchat had also been proven beneficial in the posthaste industry where fruits such as papaya coated with chitchat delay changes in peel color, maintained firmness, reduce fruit weight loss and increase shelf life overall (All, Muhammad, SIAM and Squid, 2011). Outrage life. Chitchat is also more profitable to be used in posthaste fruits and vegetables storage in the effort to prolonged shelf life when compared to disinfectant u to chitchat low cost (Economic Analysis of Posthaste Technologies for Vegetables 2014) Polysaccharide made by bacteria are secreted from the cell, forming a layer over organisms surfaces. They are characterized as ex.-polysaccharide because of the existence of polysaccharide within the cell for distinguishing.

One example of bacterial polysaccharide is Jonathan or Jonathan gum which is made by Assonants campsites which are grown largely by consuming glucose which are converted to Jonathan gum structure. There are two ways in manipulation of Jonathan. One is by altering the physiological conditions of fermentation and the other one is y using different strains of Assonants

camper’s (Tombs and Harding, 1998). Jonathan have several application in food and pharmaceutical applications. It has a high viscosity, suspending, thickening and high acid stability which makes it suitable for usage in syrups, sauces and as salad dressings.

Addition of Jonathan in drinks provides uniformity of fruit pulp. Gelling which is also a bacterial polysaccharide is found in Pseudonyms elodea which are found on elodea plant. Gelling is isolated using ethanol precipitation method from the culture medium and can undergo partial declaration with alkali treatment. This microbial polysaccharide made out of tetra-saccharine unite, closuring acid, glucose and ramose which forms a clear gel that are heat-resistant when there is divalent actions presence which making it sensitive to calcium.

It is used as agar substitute in microbial culture as well as food additive as emulsifier, stabilizer and thickeners (Tombs and Harding, 1998). Interestingly, gelling is used to substitute gelatin in the manufacture of vegan ‘ gummy candies. From the information presented, polysaccharide although it is a relatively simple substance, it does provide a variety of characteristic which could be edified to achieve the desired product for manufacturing of goods.