Biotechnologies towards Sustainable Development in Malaysia

Zarina Zainuddin

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INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
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Introduction

Chitin is the second most abundant natural polymer in nature after cellulose, which consists of 2-acetamido 2-deoxy-β-D-glucose through a β (1 →4) linkage. Chitin is unusual because it is a "natural polymer," or a combination of elements that exists naturally on earth. Usually, polymers are man-made. As a point different from other abundant polysaccharides, chitin contains nitrogen in addition to carbon, hydrogen and oxygen. It is sometimes considered to be a byproduct of cellulose, because the two are very molecularly similar. Cellulose contains a hydroxyl group and chitin contains acetamide. Like cellulose, it functions as structural polysaccharides. Chitin and chitosan are only slightly different on a molecular level. Chitosan contains an amine group, or a group without carbons bonded to oxygen, whereas chitin contains an amide group, where this is the case. Chemically, chitin is known as poly-N-acetylg glucosamine and in accordance to its proposed name, the difference between chitin and chitosan is that the degree of deacetylation in chitin is very little compared to chitosan (Muzzarelli, 1973).