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Formation of Diapers and Napkins from Hordeum Vulgare

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Abstract

Carboxymethyl Cellulose (CMC) or sodium carboxymethyl cellulose (NaCMC) is a cellulose derivative with carboxymethyl groups ($-\text{CH}_2\text{-COONa}$) bonded to some of hydroxyl groups on cellulose backbone. SAPs materials are widely used for the products that require high hygienic, such as baby diapers and sanitary napkins. Cellulose which is the raw material of generating modified cellulose is a common natural polymer found vastly in plants and one among them is Barley (*Hordeum vulgare*). It is a crop/grain cultivated in the various parts of Nepal ranging from East to west. This research has investigated, isolated, and characterized CMC in Barley collected with the aim of improving socio-economic condition of farmers.

Keywords: Socio- Economic, CMC, . Hordeum Vulgare Etc.

Introduction-

Carboxymethyl cellulose (CMC) or sodium carboxymethyl cellulose (NaCMC) is a cellulose derivative with carboxymethyl groups ($-\text{CH}_2\text{-COONa}$) bonded to some of hydroxyl groups on cellulose backbone. The polar carboxyl groups provide the cellulose soluble, chemically reactive and strongly hydrophilic and so the application of CMC in superabsorbent fields becomes attractive and promising¹. Superabsorbent polymers, otherwise known as SAPs, are super soakers, or water holding crystals which are materials that swell in water to form a clear gel and unlike a sponge, In the global arena of superabsorbent polymers (SAPs) related research works some of the names and their works are notable. Most of the superabsorbent material found in present markets uses a synthetic material such as acrylic compounds. However, the use of such superabsorbent material in large quantities as a disposable material is causing environmental problems. Therefore, the use of environmental-friendly materials needs to be developed more. Optimization of reaction conditions for preparing carboxymethyl cellulose is necessary to obtain carboxymethyl cellulose (CMC) by etherification using sodium monochloroacetate and sodium hydroxide.

Experimental And Method-

Emphasis has been given toward investigating the appropriate conditions leading to good delignification with the least loss of cellulose and hemicellulose contents⁸. Cellulose isolation is performed by extraction followed by acetylation resulting cellulose diacetate. The following shows the chemical composition of some fibres shows the chemical composition of the fibres from several types of non- timber plant. Bagasse, rice straw, wheat stalks, bamboo, oil palm empty bunches, barley etc are

some examples of the cultivation/non-cultivation sources of cellulose. Carboxymethyl cellulose obtained from these plants wastes has a higher degree of substitution (DS) and is expected to be more valuable. The use of non-wood cellulose sources has been explored and developed since the wood price is relatively expensive and associated with forest conservation cellulose for various applications. In addition, with relatively low lignin content (i.e., 0-11%-w) from these plants will be more easily removed to obtain high-purity cellulose¹¹. Experimental Methods Collection of Barley Barley husks were collected from Dhangadhimai municipality, Siraha district of Nepal. The whole plant except grain was dried and milled. An ideal pre-treatment was done to reduce the lignin content in the barley . Collection of Barley Barley husks were collected from Dhangadhimai municipality, Siraha district of Nepal. The whole plant except grain was dried and milled. An ideal pre-treatment was done to reduce the lignin content in the barley and further processing was carried out in the P.N. Campus Chemistry laboratory. Pretreatment with Alkali Pretreatment was carried out in Erlenmeyer flasks (250 ml) by treating with 2%, 4%, 6%, 8% and 10% NaOH solution varying time duration at 100 oC ground with KBr were subjected to Fourier Transforms IR (FTIR) measurement at the wave number range of 4000-400 cm⁻¹

Conclusion-

Although the majority of the superabsorbents are nowadays manufactured from synthetic polymers (essentially acrylics) due to their superior price-to efficiency balance the world's firm decision for environmental protection potentially support the ideas of partially/totally replacing the synthetics by "greener" alternatives like barley. After the extraction of CMC We can form diapers and napkins.

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