Applications of tannins extracted from bark in pulp and paper industry

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Currently, ca 7-million-m^3 bark mostly from spruce and pine are taken out by Swedish forest industry. Most of the bark is burnt in pulp mills or in sawmills mostly on site for steam and heat generation. Few commercial processes use bark as a raw material. Currently Tannin is the only profitable product that is extracted from bark and available on the global market. Tannins have a range of uses, starting with traditional use in leather tanning and wine making, and more recently extended into foam for fibreboards, anticorrosive applications and as a flocculants in wastewater treatment. Our current project aims at providing a systematic approach to utilize condensed and cationized tannins extracted from low-cost spruce/pine bark in wood in pulp and paper industry to improve the paper quality e.g. paper strength as measured by the standard methods used by cellulose industry. Our primary results show that tannins reduce the microbial load in the pulp as reflected in the reduction of gas production during storage of recycled pulp. The objectives is then to evaluate condensed tannins isolated from spruce bark as an alternative to the conventional synthetic and toxic chemicals used in the pulp and paper production. The use of natural available tannins for production of new products may open up new doors towards not only a sustainable forestry-based biorefinery but also be useful for other industrial applications.

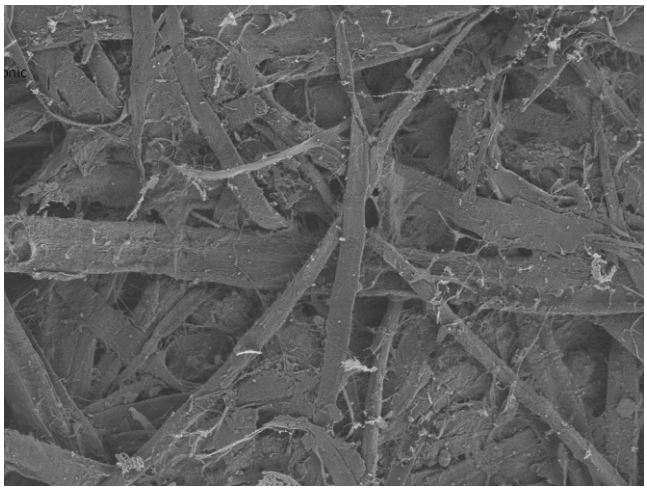

Figure: Scanning electron microscopy (SEM) of recycle pulp