

Table 1

Properties of cellulosic substrates as crystallinity index (CrI), fraction of β -glucosidic bond accessible to cellulase (F_a), average degree of polymerization (DP_n), degree of substitution (DS), and fraction of reducing ends (F_{Re}) [20,21,22,23].

Substrate	Size (μm)	CrI	F_a (%)	DP_n	DS	F_{Re} (%)
<i>Soluble</i>						
Carboxymethyl cellulose (CMC)	–	–	100	400	0.65–0.9	0.05–1
<i>Insoluble</i>						
Microcrystalline cellulose (Avicel)	50	0.7–0.9	0.6	90–220	–	0.2–0.67
Corncob (CC)	300	0.57	–	–	–	–

- [20] Seneesrisakul K, Gulari E, Chavadej S. Study on microbial pretreatment for enhancing enzymatic hydrolysis of corncob. *Int J Biol Food Vet Agril Eng* 2014;8:1004–9. [Accessed November 15, 2016, Available from: <http://waset.org/publications/9999351>].
- [21] Percival Zhang YH, Himmel ME, Mielenz JR. Outlook for cellulase improvement: Screening and selection strategies. *Biotechnol Adv* 2006;24:452–81. <http://dx.doi.org/10.1016/j.biotechadv.2006.03.003>.
- [22] Mittal A, Katahira R, Himmel ME, Johnson DK. Effects of alkaline or liquid-ammonia treatment on crystalline cellulose: Changes in crystalline structure and effects on enzymatic digestibility. *Biotechnol Biofuels* 2011;4:41. <http://dx.doi.org/10.1186/1754-6834-4-41>.
- [23] Zhang Z, Zhao ZK. Solid acid and microwave-assisted hydrolysis of cellulose in ionic liquid. *Carbohydr Res* 2009;344:2069–72. <http://dx.doi.org/10.1016/j.carres.2009.07.011>.