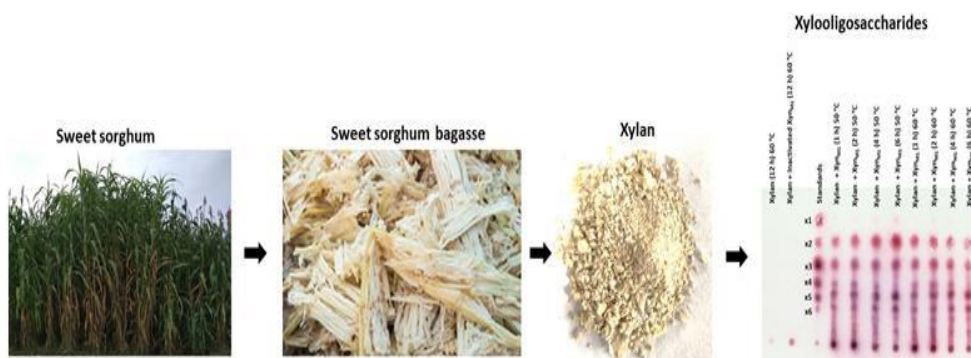


A novel GH10 xylanase for xylan hydrolysis and xylooligosaccharide production

Dr Sudhir P. Singh, Ms. Namrata Joshi, and Ms. Manisha Sharma at DBT's Center of Innovative and Applied Bioprocessing (CIAB), Mohali have discovered a novel GH-10 xylanase from a hyperthermophilic aquatic site metagenome. The novel xylanase not only shows thermophilic activity profile at neutral pH, but also retains substantial activity at mild acidic to alkaline and high-salt conditions. It is also tolerant to the presence of non-ionic surfactants and organic solvents in the reaction medium. The xylanase has capability to catalyze the hydrolysis of xylan biomass, obtained from different sources, e.g., sweet sorghum baggase and birch wood xylan, producing prebiotic XOS biomolecules. The XOS thus produced were examined to stimulate the probiotic cell growth under *in vitro* condition.



This is the first report of a xylanase discovered by analyzing the metagenome from a thermal spring of Indian origin. The discovery has been patented (Indian patent file number 201811041913) and work has been published in a journal the *Applied Microbiology and Biotechnology*.

Xylan is the second most abundant agri-biomass, after cellulose. Methods should be developed to transform xylan into xylooligosaccharide (XOS). XOS is short-chain carbohydrate with the non-digestible and gut microbiota growth stimulating properties. Further, XOS exerts various health-beneficial effects, e.g., prevention of constipation, reduction in cholesterol level, mineral absorption, immune modulation, and anti-cancerous effects, etc. XOS is an emerging prebiotic functional ingredient that can be used food, bakery, and dairy products.

Contact details:

Chief Executive Officer (Attn: Dr. Sudhir P. Singh)
DBT-Center of Innovative and Applied Bioprocessing (DBT-CIAB)
Mohali 140306, Punjab
E-mail: ceo@ciab.res.in; sudhirsingh@ciab.res.in;
Phone: 01725221415