



In situ production of xylooligosaccharides by *Aspergillus tubingensis* from corn cob



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Xylooligosaccharides (XOS) are prebiotic, functional food ingredients, with biological benefits such as immunomodulatory and anti-inflammatory properties, anticancer and antioxidant activity. Fermentation of lignocellulosic material to obtain XOS is a promising alternative to the classical methods (pre-treatment, enzymatic, chemical and/or auto-hydrolytic methods). Xylan rich agro-industrial wastes are used as a substrate for fungal xylanase production and as start material for xylan extraction. *In situ* XOS production during fungal growth on corn cob, as xylan rich agro-waste, represents an attractive and advantageous approach.

In situ production of XOS during fungal growth

Corn cob

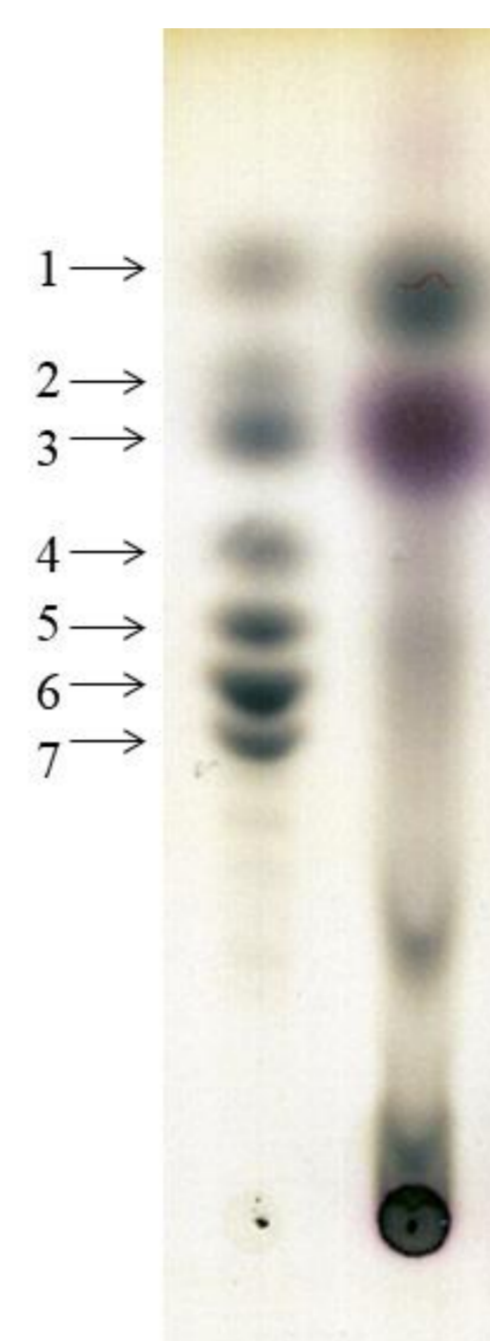


Aspergillus tubingensis



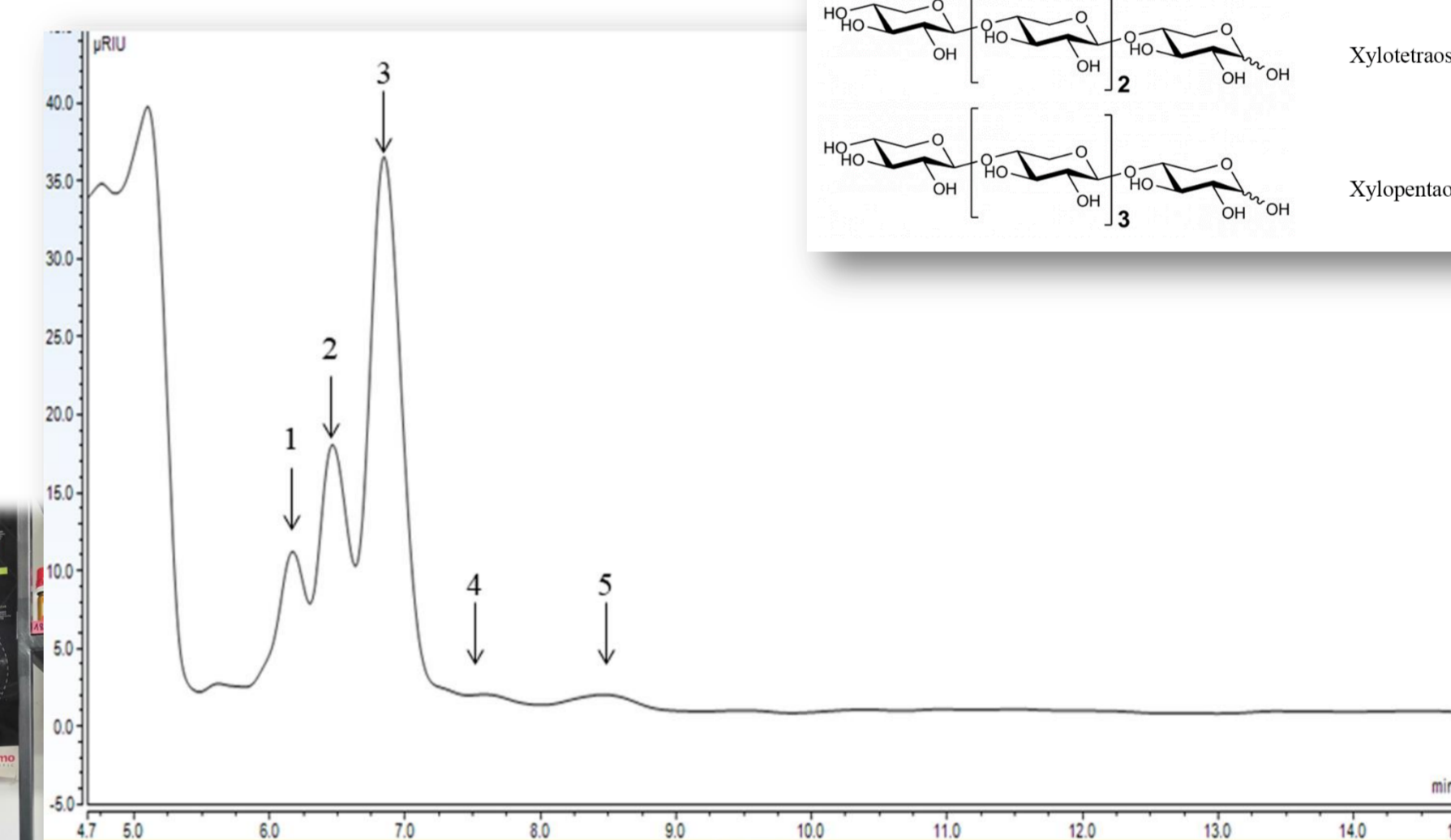
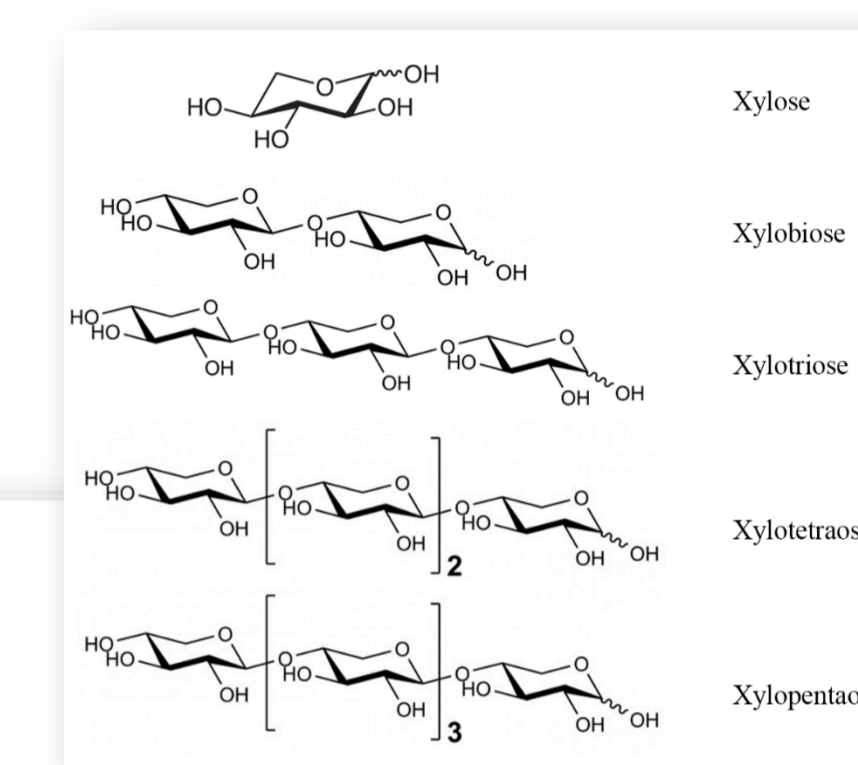
SSF fermentation

TLC and HPLC analysis of XOS



TLC analysis

Standard sugars:
1-xylose; 2-arabinose; 3-xylobiose;
4-xylotriose; 5-xylotetraose;
6-xylopentaose;
7-xylohexaose (1 mg/mL each)



HPLC analysis

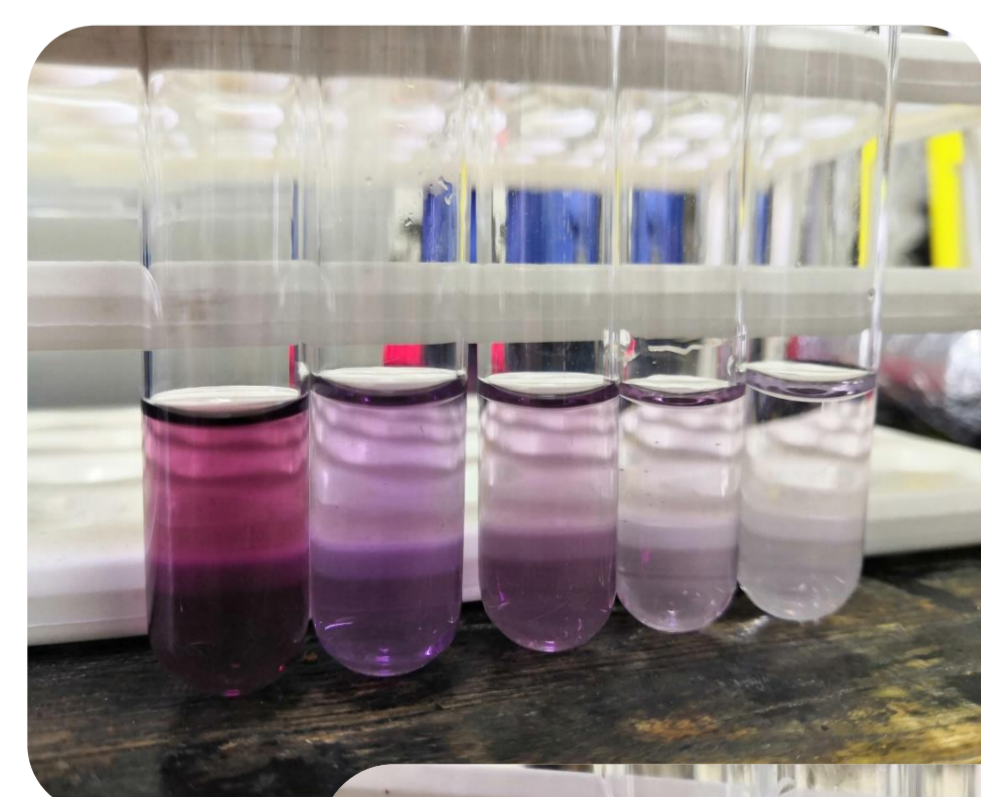
Usage of XOS

- prebiotics
- functional food ingredients.



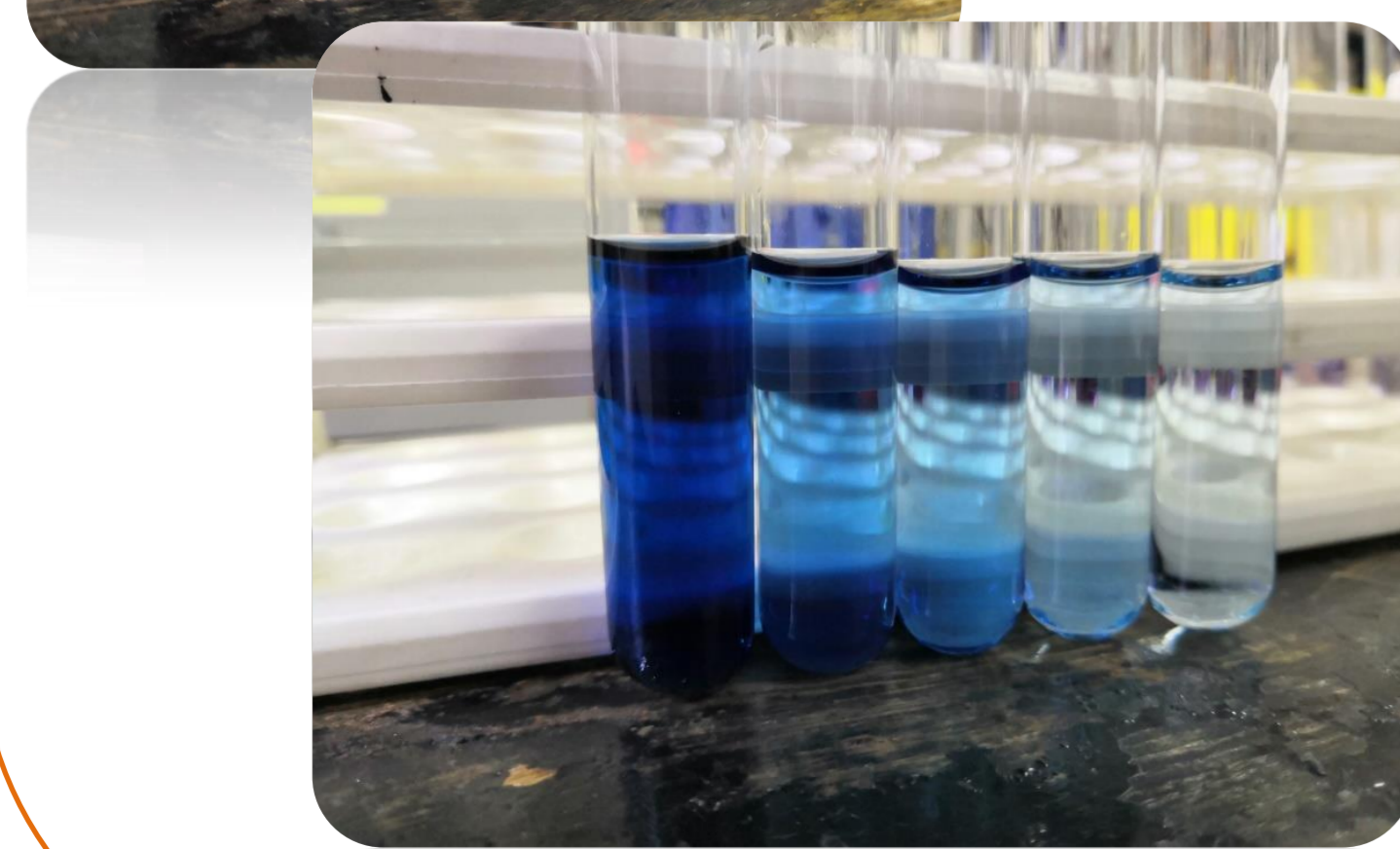
Antioxidant potential of XOS

DPPH assay



	ORAC (mmol TE)	DPPH (μmol AAE)	FRAP (μmol AAE)
XOS	19.90	7.07	890.90

FRAP assay



ORAC assay



Advantages of *in situ* XOS production include bypassing the extraction and purification of xylan and enzymes, environmental and economical sustainability. The antioxidative potential XOS exhibit classifies them as functional food ingredients.

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