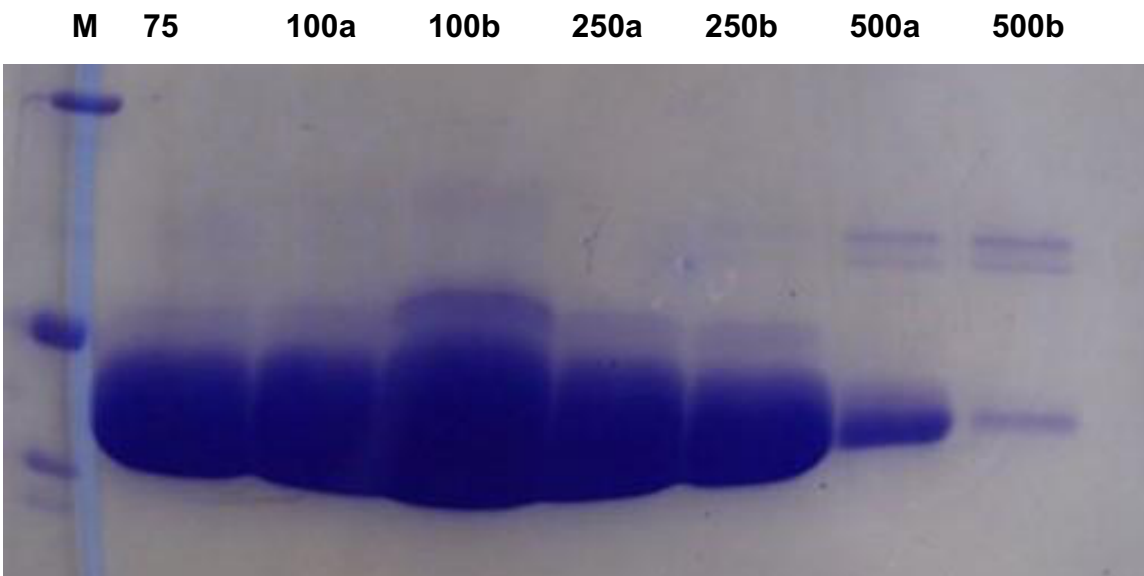
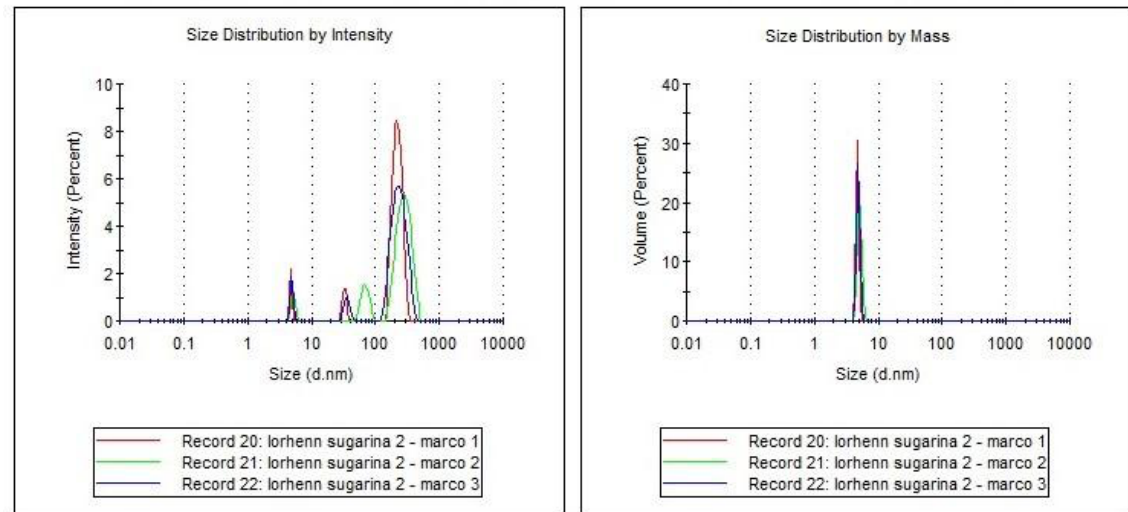


Supplementary Material



Supplementary Figure 1. 12% SDS-PAGE showing the purification of SUGARWIN2 by IMAC. Lane M Molecular Weight Marker; Lane 1-7 aliquots of fractions eluted with crescent concentrations of imidazole (75 to 500 mM). The arrow indicates the band representing purified SUGARWIN2.



Supplementary Figura 2. DLS of SUGARWIN2. The DLS of SUGARWIN2 showed a monodisperse peak that corresponded to 99.7% of the mass consistent with the mass of the protein.

Supplementary Table 1. Distribution of sequences among the clades of the phylogenetic tree

					Clades				
					C	C			
					1	2	C3	C4	
Sequences with H or N residues in position 11									
					Percentage (%)				
H11					15	97	6	100	
N11					75	3	94	0	
Number of genes									
Su									
bcl	Cla	Ord	Cla						
ass	de	er	de	Species					
Pet ros avii dae	Co mm elin ids	Asp		<i>Asparagus officinalis</i> (Aoff)	1	0	0	0	
		ara		<i>Dendrobium catenatum</i> (Dcat)	0	1	0	0	
		g.		<i>Phalaenopsis equestris</i> (Pequ)	0	1	0	0	
		Are		<i>Elaeis guineensis</i> (Egui)	2	0	0	0	
				c.	<i>Phoenix dactylifera</i> (Pdac)	2	0	0	0
				Zin	<i>Ensete ventricosum</i> (Even)	1	0	0	0
		gib.			<i>Musa acuminata subsp. malaccensis</i> (Macu)	3	0	0	0
					<i>Musa balbisiana</i> (Mbal)	2	0	0	0
				<i>Ananas comosus</i> (Acom)	2	0	0	0	
	Po ale s		BO P	<i>Carex littledalei</i> (Clit)	1	0	0	0	
				<i>Aegilops tauschii subsp. Tauschii</i> (Atau)	3	3	1	0	
				<i>Triticum dicoccoides</i> (Tdic)	6	6	2	0	
				<i>Triticum turgidum subsp. durum</i> (Ttur)	1	6	0	0	
				<i>Brachypodium distachyon</i> (Adis)	1	1	0	0	
				<i>Oryza brachyantha</i> (Obra)	0	2	0	1	
				<i>Oryza meyeriana var. granulata</i> (Omey)	0	2	0	1	
				<i>Oryza sativa Japonica Group</i> (Osat)	0	3	0	1	
				<i>Eragrostis curvula</i> (Ecur)	3	1	2	6	
				<i>Dichanthelium oligosanthes</i> (Doli)	2	0	0	2	
				<i>Panicum hallii</i> (Phal)	2	0	1	2	
				<i>Setaria italica</i> (Sita)	3	0	1	2	
				<i>Setaria viridis</i> (Svir)	3	0	1	2	
				<i>Sorghum bicolor</i> (Sbic)	1	0	1	2	

				<i>Zea mays</i> (Zmay)	1	0	2	2
				<i>Miscanthus lutarioriparius</i> (Mlut)	3	0	4	9
				<i>Saccharum</i> spp. (SP80-3280)	8	0	14	18*
				<i>Saccharum spontaneum</i> (Sspo)	1	0	2	5
		Al.		<i>Zostera marina</i> (Zmar)	0	0	2	0

*Includes SUGARWIN2

**includes SUGARWIN1.

***Al., Alismatales; Zigib., Zingiberales; Arec., Arecales; and Asparag., Asparagales.