Back to article

Table S1. Composition of the aqueous two-phase system (ATPS)

ATPS	*w*(salt)/%	*w*(water)/%	*w*(ethanol)/%
Ethanol/Na_2HPO_4 1 %	0.52	80.32	19.16
Ethanol/Na_2HPO_4 2 %	1.04	79.90	19.07
Ethanol/Na_2HPO_4 3 %	1.56	79.48	18.97
Ethanol/K_2HPO_4 1 %	0.68	80.19	19.13
Ethanol/K_2HPO_4 2 %	1.36	79.63	19.00
Ethanol/K_2HPO_4 3 %	2.04	79.08	18.88

1 to 3 %=mass fractions of salt in the solution

Back to article

Table S2. The effect of low and high speed mixing on the extraction of glucomannan from porang flour

Porang flour	Yield/%				Glucomannan-proximate composition				Starch			
	Glucomannan		Impurity		*w*/%							
					Glucomannan		Impurity		Glucomannan		Impurity	
	Low speed	High speed	Low speed	High speed	Low speed	High speed	Low speed	High speed	Low speed	High speed	Low speed	High speed
Mesh 60	(63.3± 1.1)^{aA}	(59.4± 1.0)^{bB}	(13.2± 0.4)^{a}	(22.4± 1.7)^{a}	(71.0± 24)^{aB}	(80.66± 3.58)^{aA}	(1.7± 0.3)^{aB}	(4.1± 0.2)^{a}	(20.7± 0.6)^{b}	(6.5± 0.5)^{b}	(28.4± 0.7)^{b}	(31.4± 0.5)^{b}
Mesh 80	(63.6± 1.3)^{a}	(62.0± 1.0)^{a}	(12.9± 0.5)^{a}	(21.9± 1.6)^{a}	(70.4± 6.4)^{aA}	(80.20± 0.08)^{aA}	(1.3± 0.7)^{aA}	(0.9± 0.3)^{cC}	(22.2± 1.0)^{aA}	(7.1± 0.5)^{abAB}	(28.5± 0.3)^{bB}	(32.1± 0.5)^{abAB}
Mesh 100	(65.8± 1.3)^{a}	(62.7± 0.7)^{a}	(12.80± 0.09)^{a}	(20.6± 1.5)^{a}	(67± 0.04)^{bB}	(78.06± 0.81)^{aA}	(0.7± 1.5)^{aB}	(1.8± 0.2)^{bB}	(22.7± 0.8)^{a}	(8.0± 0.5)^{a}	(31.0± 0.3)^{a}	(33.2± 1.0)^{a}

Low speed: 400 rpm for 30 min, high speed: 18 000 rpm for 2 min

Back to article

Table S3. The tie line length (TLL) and critical point of aqueous two-phase system (ATPS)

Salt	TLL	C-point	
		X (*w*(salt)/%)	Y (*w*(ethanol)/%)
Na_2HPO_4	37.02	1.65	15.27
K_2HPO_4	29.39	1.95	17.79

Back to article

Table S4. DSC peaks of glucomannan obtained from ethanol extraction (control) and the aqueous two-phase system (ATPS) extraction

Sample	Peak 1		Peak 2		Peak 3	
	Temperature/°C	Δ*H*/mcal	Temperature/°C	Δ*H*/mcal	Temperature/°C	Δ*H*/mcal
Control	99.87	–3060	293.09	56.94	325.58	223.18
Ethanol/Na_2HPO_4 1 %	83.19	–1310	274.87	27.83	316.37	280.99
Ethanol/Na_2HPO_4 2 %	73.74	–402.89	273.63	0.33	310.95	190.10
Ethanol/Na_2HPO_4 3 %	76.72	–1080	268.23	9.41	314.32	278.49
Ethanol/K_2HPO_4 1 %	75.28	–1690	274.21	34.39	317.40	313.19
Ethanol/K_2HPO_4 2 %	77.97	–613.11	264.56	34.74	307.71	124.75
Ethanol/K_2HPO_4 3 %	72.69	–770.57	262.73	47.22	307.61	162.77

1 to 3 %=mass fractions of salt in the solution

Back to article

Table S5. TGA thermogram of glucomannan obtained from ethanol extraction (control) and the aqueous two-phase system (ATPS) extraction

Sample	Temperature/°C	*w*(mass loss)/%
Control	299.63–.73	55.69
Ethanol/Na_2HPO_4 1 %	267.86–327.30	47.92
Ethanol/Na_2HPO_4 2 %	265.07–325.04	34.28
Ethanol/Na_2HPO_4 3 %	259.14–319.11	36.14
Ethanol/K_2HPO_4 1 %	266.76–324.66	44.18
Ethanol/K_2HPO_4 2 %	257.34–316.81	44.49
Ethanol/K_2HPO_4 3 %	256.64–315.59	38.64

1 to 3 %=mass fractions of salt in the solution

Back to article

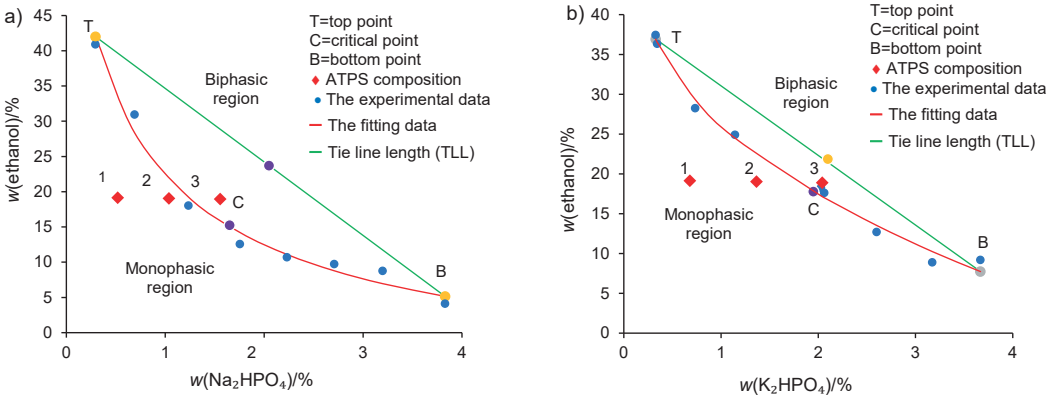

Fig. S1. Binodal curve of the aqueous two-phase system (ATPS) composed of: a) ethanol/Na_2HPO_4 and b) ethanol/K_2HPO_4-ATPS. TLL=tie line length

Back to article

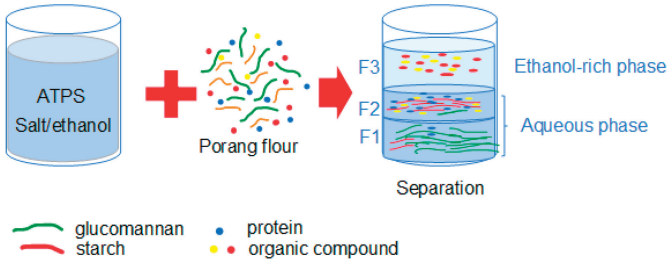

Fig. S2. The proposed mechanism of glucomannan extraction using aqueous two-phase system (ATPS). F1=glucomannan, F2=starch and a water-soluble compounds, and F3=an ethanol-soluble compound