

Microarray investigation of glycan remodeling during macrophage polarization reveals α 2-6 sialic acid as an anti-inflammatory indicator

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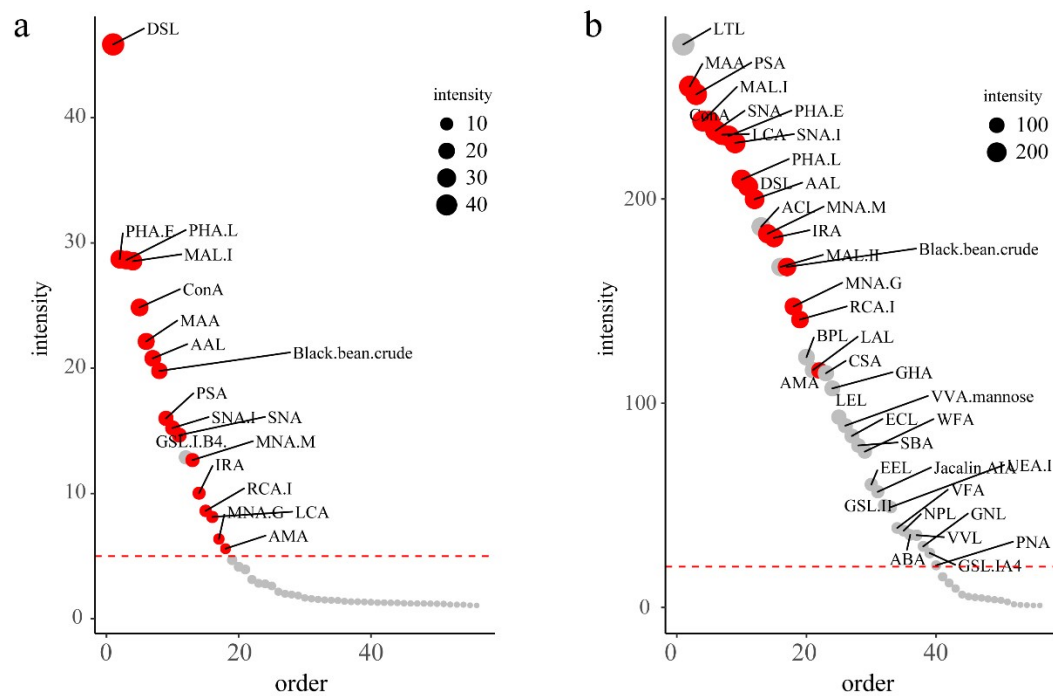


Fig. S1 Fluorescence intensity plot of the lectins to THP-1 (a) and RAW264.7 (b). The size of the dot represent the fluorescence intensity. The signal under the red line was seen as none detected signal in the experiment. The red dot represent the lectins which was both detected in two cell lines.

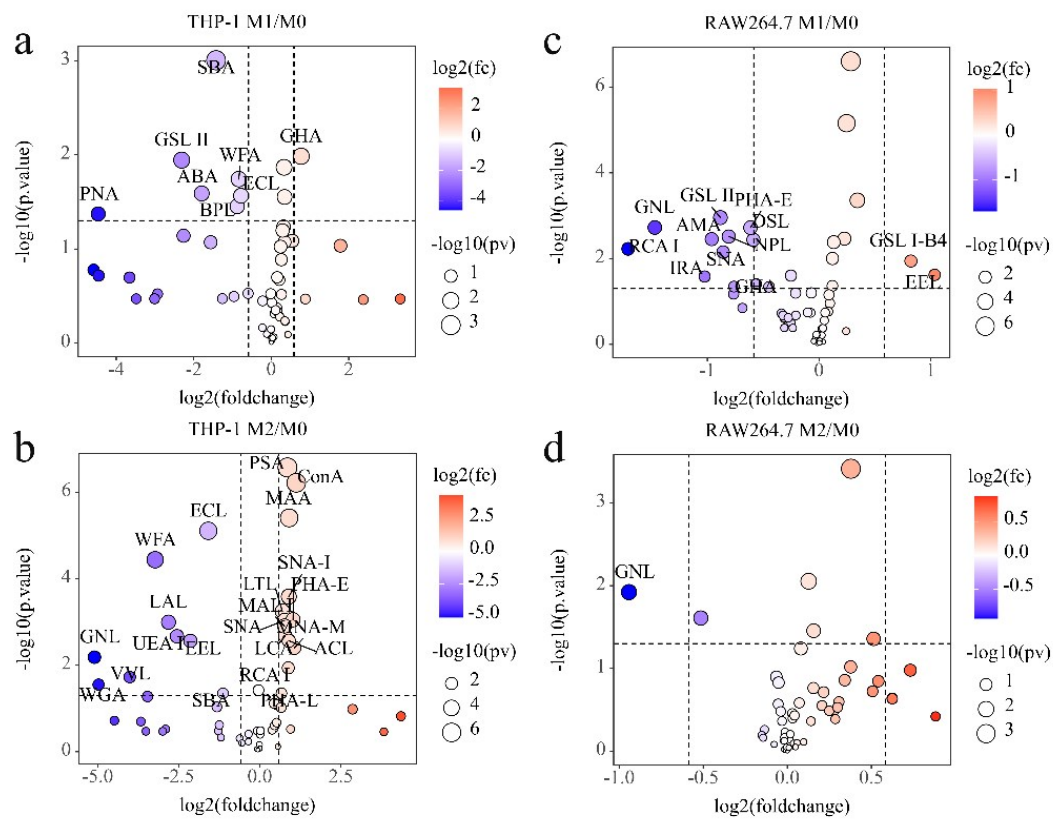


Fig. S2 The volcano plot of variation lectins during M0 differentiation into M1 (a) or M2 (b) in THP-1. The volcano plot of variation lectins during M0 differentiation into M2 (c) or M2 (d) in RAW264.7.

RAW264.7.

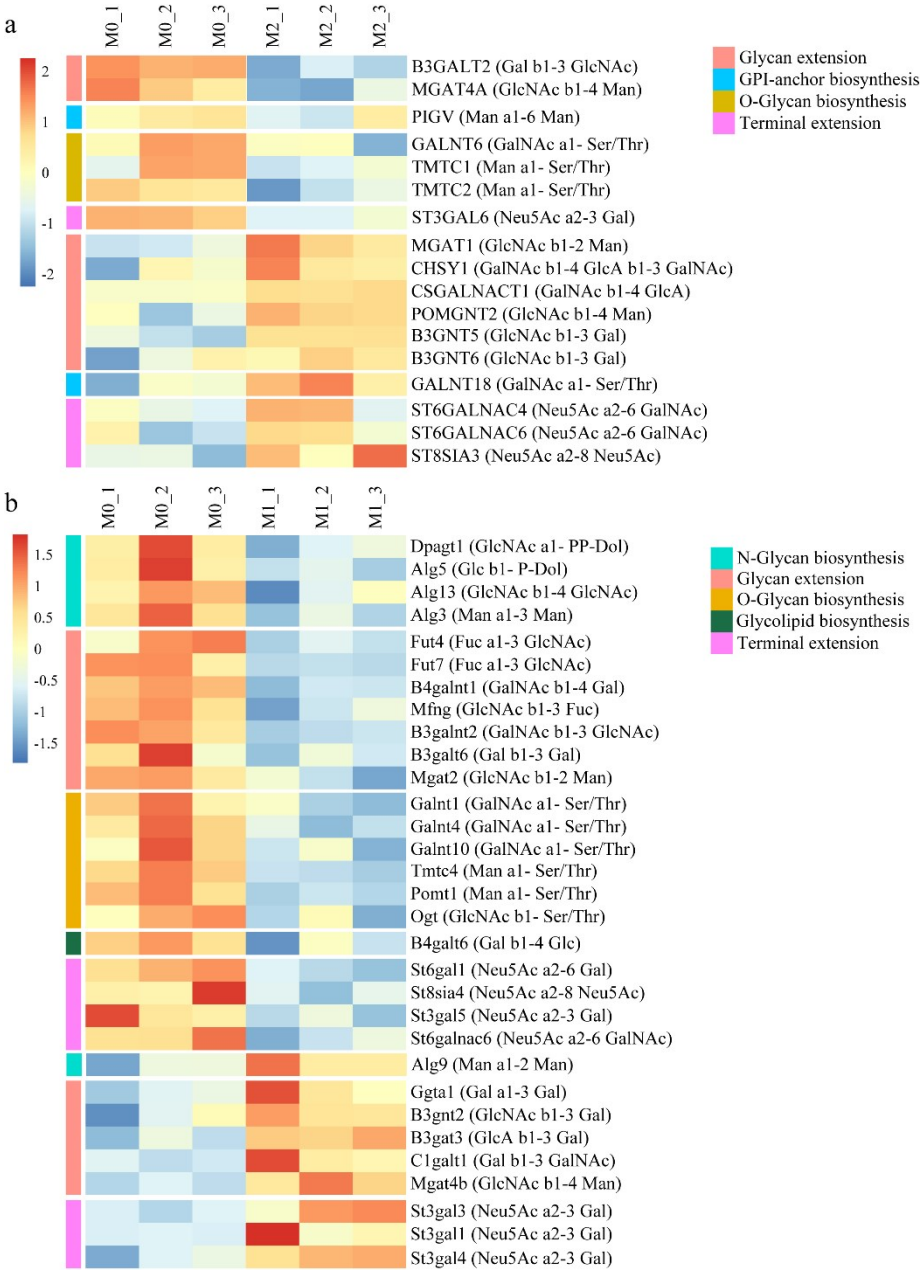


Fig. S3 Fig. S3 Heatmap of the glycosyltransferase gene in THP-1 derived macrophage and M2 subtypes (a); the heatmap of the glycosyltransferase gene in RAW264.7 and its M1 subtypes (b).

Table. S1 List of primer sequences used in qRT-PCR experiments

Species	Genes	Primers	Sequences
human	CD11b	Forward	GTGAAGCCAATAACGCAGC
human	CD11b	Reverse	CTCCCATCCGTGATGACAAC
human	CD36	Forward	TGTAACCCAAGACGCTGAGG
human	CD36	Reverse	GAAGGTTCGAAGATGGCACC

human	CCL3	Forward	CAGCCAGGTGTCATTTTCCT
human	CCL3	Reverse	TCAGGCATTCAGTTCCAGGT
human	TNF- α	Forward	TAGCCCATGTTGTAGCAAACC
human	TNF- α	Reverse	ATGAGGTACAGGCCCTCTGAT
human	CCL17	Forward	ACTGCTCCAGGGATGCCATCGTTTTT
human	CCL17	Reverse	ACAAGGGGATGGGATCTCCCTCACTG
human	CCL22	Forward	TGATTACGATCCGTTACCGTCT
human	CCL22	Reverse	CCTGAAGGTTAGCAACACCAC
human	ACTIN	Forward	CCTAGAAGCATTTGCGGTGG
human	ACTIN	Reverse	GAGCTACGAGCTGCCTGACG
mouse	NOS2	Forward	AAACCCCTTGTGCTGTTCTC
mouse	NOS2	Reverse	ATACTGTGGACGGGTTCGATG
mouse	CXCL10	Forward	AAGTGCTGCCGTCATTTTCT
mouse	CXCL10	Reverse	CCTATGGCCCTCATTCCTCAC
mouse	Arg-1	Forward	GCAGAGGTCCAGAAGAATGG
mouse	Arg-1	Reverse	AGCATCCACCCAAATGACAC
mouse	Mrc-1	Forward	GGAGGCTGATTACGAGCAGT
mouse	Mrc-1	Reverse	CATAGGAAACGGGAGAACCA
mouse	ACTIN	Forward	GTGCTATGTTGCTCTAGACTTCG
mouse	ACTIN	Reverse	ATGCCACAGGATTCCATACC

Table S2. Table of the lectins spotted on the microarray and their binding glycan linkage.

lectin	names	glycan	THP-1	RAW 264.7
N-glycan				
AMA	Arum maculatum Lectin (Lords and Ladies)	Mannose on N-glycan	√	√
ConA	Con A Lectin	Mannose on N-glycan	√	√
Complex N-glycan				
CALSEPA	Calystega sepium Lectin (Hedge Bindweed Rhizomes)	Galactosylated bianntenary N-type with bisecting GlcNAc		
PHA-E	Phaseolus vulgaris Erythroagglutinin	complex N-glycan	√	√
DSL	Datura stramonium lectin	complex N-glycan	√	√
PHA-L	Phaseolus vulgaris Leucoagglutinin	complex N-glycan	√	√
High-Mannose N-glycan				
VFA	Wisteria floribunda lectin	High Mannose	√	
UDA	Urtica dioica Lectin (Stinging Nettle)	High Mannose		
NPL, NPA	Narcissus pseudonarcissus	High Mannose	√	

	(daffodil) lectin			
GNL	<i>Galanthus nivalis</i> (snowdrop) lectin	High Mannose	√	
HHL, AL	<i>Hippeastrum hybrid</i> lectin	High Mannose		
MNA-M	Morniga M Lectin (black elderberry)	Mannose	√	√
ASA	<i>Allium sativum</i> Lectin (Garlic)	α(1, 3)-linked mannosyl units		
Fucα1-6GlcNAc (Core Fuc)				
PSA	<i>Pisum sativum</i> agglutinin	Fucα1-6GlcNAc (Core Fuc)	√	√
LCA	<i>Lens Culinaris</i> Agglutinin	Fucα1-6GlcNAc (Core Fuc)	√	√
TL	<i>Tulipa</i> sp. Lectin (Tulip)	Fucα1-6GlcNAc (Core Fuc)		
AAL	<i>Aleuria aurantia</i> lectin	Fuc a1, 6 Gal	√	√
Fuc α1, 2 Gal				
UEA I	<i>Ulex europaeus</i> agglutinin I	Fuc a1, 2 Gal	√	
PTL I, WBA I	<i>Psophocarpus tetragonolobus</i> lectin I	GalNAcα1-3(Fucα1-2)Gal		
EEL	<i>Euonymus europaeus</i> lectin	Fucα1-2Galβ1-3GlcNAc, Gala1-3Galβ1-3GlcNAc	√	
LAL	<i>Laburnum anagyroides</i> Lectin (Gold Chain)	Fucα1-2Galβ1-4Glc (H-type 6)	√	
α2, 3 sialic acid				
MAL I	<i>Maackia amurensis</i> lectin I	sialic acid α2, 3 Gal	√	√
MAA	<i>Maackia amurensis</i> Lectin	sialic acid α2, 3 Gal	√	√
α2, 6 sialic acid				
SNA, EBL	<i>Sambucus nigra</i> (Elderberry Bark)	sialic acid α2, 6 Gal	√	√
SNA-I	<i>Sambucus nigra</i> lectin	sialic acid α2, 6 Gal	√	√
Galβ1-4GlcNAc				
WFA, WFL	<i>Wisteria floribunda</i> lectin	Galβ1-4GlcNAc	√	
ECL	<i>Erythrina cristagalli</i> Lectin	Galβ1-4GlcNAc	√	
BPL	<i>Bauhinia Purpurea</i> Lectin	Galβ1-4GlcNAc	√	
RCA I, RCA120	<i>Ricinus communis</i> agglutinin I	Galb1-4GlcNAcb or Galb1-3GlcNAcb	√	√
STL, PL	<i>Solanum tuberosum</i> lectin	Galβ1-4GlcNAc, (GlcNAcβ1-4)n		

LTL	Lotus tetragonolobus lectin	Galb1-4(Fuca1-3)GlcNAc	√	
LEL, TL	Lycopersicon esculentum lectin	Galβ1-4GlcNAc	√	
GlcNAc terminal				
HMA	Homarus americanus Lectin	N-Acetylneuraminic acid, N-Acetylgalactosamine		
WGA	Triticum vulgare Lectin (Wheat Germ)	GlcNAcα1-3Galb1-4GlcNAcb		
GSL II, BSL II	Griffonia (Bandeiraea) simplicifolia lectin II	GlcNAcα1-3Galb1-4GlcNAcb		
PWM	Phytolacca americana Lectin (Pokeweed)	(GlcNAcβ1-4) _n		
ABA	Agaricus bisporus Lectin (Mushroom)	GlcNAcα1-3Galb1-4GlcNAcb		
α-Gal link				
GSL.IA4	Pure Griffonia simplicifolia Lectin	α-Gal, α-GalNAc	√	
MNA.G	Morniga G Lectin (black elderberry)	Galactose	√	√
PNA	Arachis hypogaea Lectin (Peanut)	Gal terminal	√	
GSL I-B4, BSL I-B4	GSL I - isolectin B4	Gala1-4Gal, Gala1-3Gal		√
GalNAc terminal link				
GHA	Glechoma hederacea Lectin (ground ivy)	GalNAc	√	
IAA	Iberis amara Lectin	GalNAc terminal		
IRA	Iris hybrid Lectin (Dutch Iris)	GalNAc terminal	√	√
Black.bean. crude	Phaseolus vulgaris sp. Lectin	GalNAc terminal	√	√
CSA	Cytisus sessilifolius Lectin (Portugal Broom)	GalNAc terminal	√	
VVA.mannose	Vicia villosa Lectin (Hairy Vetch, Mannose Specific)	GalNAcβ1-4Gal, GalNAcβ1-3Gal, α-GalNAc	√	
VVL, VVA	Vicia villosa lectin	GalNAcβ1-4Gal, GalNAcβ1-3Gal, α-GalNAc	√	
SBA	Glycine max Lectin (Soybean)	α- or β-linked GalNAc, Gala1-4Gal-Glc	√	
DBA	Dolichos biflorus agglutinin	α- or β-linked GalNAc		

HPA	Helix pomation Lectin (Snail)	α -GalNAc, α -GlcNAc		
T, Tn antigen				
ACL, ACA	Amaranthus caudatus lectin	Sia α 2-3Gal β 1-3GalNAc (sialyl T)	√	
MAL II	Maackia amurensis lectin II	Gal β 1-3GalNAc (T-antigen), Sia α 2-3Gal β 1-3GalNAc (sialyl T)	√	
MPL	Maclura pomifera lectin	α -GalNAc (Tn-antigen), Gal β 1-3GalNAc (T-antigen)		
Jacalin, AIA	Jacalin	GlcNAc β 1-3GalNAc (Core3), Sia α 2-3Gal β 1-3GalNAc (sialyl T), Gal β 1-3GalNAc (T-antigen), α -GalNAc (Tn- antigen)	√	
SSA	Salvia sclarea	GalNAc α -O-Ser/Thr (Tn antigen)		