

Additional data.

Table S1. Experimental condition matric coded factors based on central composite design for this study.

Run	A Inlet Temperature (°C)	B Feed Flowrate (%)	C Air Flowrate (L/hr)	Response 1 The yield of RBP Powder (g RBP/100g RRB)
1	165	20	388	19.0
2	165	20	388	21.6
3	180	15	325	9.9
4	165	20	388	17.8
5	180	25	450	26.8
6	165	20	493	25.8
7	150	25	325	10.2
8	165	20	388	18.8
9	150	25	450	23.9
10	165	20	388	18.4
11	165	20	388	19.3
12	165	20	388	18.4
13	165	20	388	18.1
14	180	15	450	21.8
15	165	20	388	18.7
16	165	20	388	19.6
17	165	20	388	17.9
18	165	20	388	18.2
19	150	15	450	19.3
20	165	28	388	18.2
21	165	12	388	17.2
22	140	20	388	16.3
23	150	15	325	7.3
24	165	20	388	18.4
25	165	20	388	18.6
26	165	20	282	4.75
27	190	20	388	17.4
28	180	25	325	12.4
29	165	20	388	18.6

Protein sequencing method based on *de novo* peptide sequencing.

Q75GX9|GLB63_ORYSJ

| Protein Coverage | Supporting Peptides |

Protein Coverage:

1 MATRARATIL LLLAAVLFAA AAAASGEDRR RETSLRRCLQ RCEQDRPPYE RARCVQECKD QQQQQQERRR EHGGHDDDRR
81 DRDRRGEGSS EEEDEGRERG SRRRPYVFGR RSFRQVVRSD QGSVR **LLPPF HQASSLLRG**I KNYRVAVLEA NPRS FVMPTH

161 TDAHCICYVA QGEGVVVAIE NGEKWSYAIR QGDVFVAPAG TINYLANTDG RRKLIVTKIL HTISVPGQIQ FFFAPGGRNP
241 ESFLSSFSKG VQRAAFKISE EKLEKLLGKQ DKGVIIRASE EQVRELRRHA SEGGHGPW LPPFGESSION PFNILEQRPR
321 FANRHGRLYE ADAR**SFHDLA EHDIR**VAVVN ITAGSMNAPF YNTRSVKVAY VLDGEGEAEI VCPHLSRGGR GGESEERRRE
401 RGKGKWREEE EEEEEQQKGQ EEEEEEQVGQ GYETIRARLS R**GTVFVVPSG HPIVVTSSRD** STLQIVCFDV HANNNERMYL
481 AGMNSVLKKL DPQAKELAFA ASARE**EVDELL NAQQESAFLA GPEK**SGRRGE ESEDEDRRRR RSHRGRGDEA VETLLRMAAA
561 AV

Figure S1. Globulin sequence for raw rice bran (RRB).

Q75GX9|GLB63_ORYSJ

| Protein Coverage | Supporting Peptides |

Protein Coverage:

1 MATRARATIL LLLAAVLFAA AAAASGEDRR RETSLRRCLQ R**CEDRPPYE** RARCVQECKD QQQQQQERRR EHGGHDDDRR
81 DRDRRGEGSS EEEDEGRERG SRRRPYVFGR RSFRQVVRSD QGSVR **LLPPF HQASSLLRG**I KNYRVAVLEA NPRS FVMPTH
161 TDAHCICYVA QGEGVVVAIE NGEKWSYAIR QGDVFVAPAG **TINYLANTDG RRKLIVTKIL HTISVPGQIQ FFFAPGGRNP**
241 **ESFLSSFSKG VQRAAFKISE EKLEK**LLGKQ DKGVIIRASE EQVRELRRHA SEGGHGPW LPPFGESSION **PFNILEQRPR**

321 FANRHGR**LYE ADARSFHDLA EHDIR**VAVVN ITAGSMNAPF YNTRSVKVAY VLDGEGEAEI VCPHLSRGGR GGESEERRRE
382
401 RGKGKWREEE EEEEEQQKGQ EEEEEEQVGQ GYETIRARLS R**GTVFVVPSG HPIVVTSSRD** STLQIVCFDV HANNNERMYL

481 AGMNSVLKKL DPQAKELAFA ASARE**EVDELL NAQQESAFLA GPEK**SGRRGE ESEDEDRRRR RSHRGRGDEA VETLLRMAAA

561 AV

Figure S2. Globulin sequence for rice bran powder (RBP).

P07730|GLUA2_ORYSJ[Protein Coverage](#) | [Supporting Peptides](#) |

Protein Coverage:

1 MASINRPIVF FTVCLFLLCD GSLAQQLLGQ STSQWQSSRR GSPRGCRFDR **IQAFEPIR**SV RSQAGTTEFF DVSNELFQCT

81 GVSVVRRVIE PRL**GLLLPHYT NGASLVYIIQ GR**GITGPTFP GCPETYQQQF QQSGQAQLTE SQSOSHFKD EHQKIHRFQ

161 **GDVIALPAGV AHWCYNDGEV PVVAIYVTDI NNGANQLDPR QRDFILLAGNK** RNPQAYRREV EEWSONIFSG FSTELLSEAF

241 GISNQVARQL QCQNDQRGEI VRVER**GLSLL QPYASLQEQE QQGMQSREHY** QEGGYQQSQQY GSGCPN**GLDE TFCTMR**VRQN

321 IDNPNRADTY NPRAGRVTNL NSQNFFILNL VQMSAVKVNL YQNALLSFW NINAHSIVYI TQGRAQVQVV NNNGKTVFNG

401 ELRRGQLLIV PQHYVVVKKA QREGCAYIAF K**TNPNSMVSH IAGKSSIFRA LPTDVLANAY RISREEAQLR KHNRGDEFGA**

481 **FTPLQYKSYQ DVYNVAESS**

Figure S3. Glutelin sequence for raw rice bran (RRB).**P07730|GLUA2_ORYSJ**[Protein Coverage](#) | [Supporting Peptides](#) |

Protein Coverage:

1 MASINRPIVF FTVCLFLLCD GSLAQQLLGQ STSQWQSSRR GSPRGCRFDR **IQAFEPIR**SV RSQAGTTEFF DVSNELFQCT

81 GVSVVRRVIE PRL**GLLLPHYT NGASLVYIIQ GR**¹⁰¹ GITGPTFP GCPETYQQQF QQSGQAQLTE SQSOSHFKD EHQKIHRFQ

161 **GDVIALPAGV AHWCYNDGEV PVVAIYVTDI NNGANQLDPR QRDFILLAGNK** RNPQAYRREV EEWSONIFSG FSTELLSEAF

241 GISNQVARQL QCQNDQR**GEI VRVER**GLSLL QPYASLQEQE QQGMQSREHY QEGGYQQSQQY GSGCPN**GLDE TFCTMR**VRQN

321 IDNPNRADTY NPRAGRVTNL NSQNFFILNL VQMSAVKVNL YQNALLSFW NINAHSIVYI TQGRAQVQVV NNNGKTVFNG

401 ELRRGQLLIV PQHYVVVKKA QREGCAYIAF K**TNPNSMVSH IAGKSSIFRA LPTDVLANAY RISREEAQLR KHNRGDEFGA**

481 **FTPLQYKSYQ DVYNVAESS**

Figure S4. Glutelin sequence for rice bran powder (RBP).

P20698|PRO28_ORYSJ

| Protein Coverage | Supporting Peptides |

Protein Coverage:

The sequence coverage diagram shows the primary sequence of the Prolamin protein from raw rice bran (RRB). The sequence is: 1 MKIIFFFALL AIAACCSASAQ FDAVTQVYRQ YQLQPHLMLQ QQMLSPCGEF VRQQCSTVAT PFFQSPVFQL RNCQVMQQQC 81 CQQLRMIAQQ SHCQAISSVQ AIVQQRLQQ FASVYFDQSQ AQAQAMLALN MPSICGIYPS YNTAPCSIPT VGGIYW. The diagram highlights several peptides with blue boxes above the sequence. Key residues are labeled with red boxes: 'C' at position 81, '73' at position 73, '80' at position 80, and a red box containing 'Carbamidomethylation (+57.02)' at the end of the sequence.

Figure S5. Prolamin sequence for raw rice bran (RRB).

Q75KH3|GRDH_ORYSJ

| Protein Coverage | Supporting Peptides |

Protein Coverage:

The sequence coverage diagram shows the primary sequence of the Glucose and ribitol protein from rice bran powder (RBP). The sequence is: 1 MASQQFPPQN QETQPGKEHA MDPRPEAIIQ SYKPANKLKD KVAIVTGGDS GIGRAVCLCF ALEGATVAFT YVK GQEEKDA 81 EETL RALRDI RARTGAKDPM AIPADLGYYDD NCRKVVDEVA GAYGGAIDIL VNNAAEQYER PSITDITEDD LERVFR TNIF 161 SYFFMSK HAV KMRDRRGGA GAGGCSIINT SSINAYGNK TLTDYTATKG AIVAFTR ALA LQLAEGIRV NGVAPGPIWT 241 PLIPASFAEE KVRQFGSQVP MGRAGQPSEV APSFVFLASD DASYMSGQML HVNGGVIVNG. The diagram highlights several peptides with blue boxes above the sequence.

Figure S6. Glucose and ribitol sequence for rice bran powder (RBP).

P46257|ALF2_PEA

| Protein Coverage | Supporting Peptides |

Protein Coverage:

The sequence coverage diagram shows the primary sequence of the Fructose-bisphosphate aldolase protein from rice bran powder (RBP). The sequence is: 1 MSHFKSKYHD ELIANAAYIG TPGK GTLAAD ESTGTIGKRL SSINVENVES NRQALRELLF TASWLFLQYL SGVILFEETL 81 YQKTAAGKPF VDVLNEAGVL PGKVDKGTV ELAGTDGETT TQGLDGGLAR CRKYYEAGAR FAKWRAVLKI GANEPEHHSI 161 HENAYGLARY AVICQENGKV PIVEPEILVD GSHDILKCAA ITERVLAATY KALSDHHVIL EGTLKLKPNMV TPGSDAPKVA 241 PEVIAEHTVR ALQRTVPAAV PAVVFLSGQQ SEEAEVNLN AINQIKGKKP WTLSFSFGRA LQQSTLKAWG GKTEENVKAAQ 321 DALLTRAKAN SEATLGYTKG ASNLGAGASE SLHVKDYKY. The diagram highlights several peptides with blue boxes above the sequence.

Figure S7. Fructose-bisphosphate aldolase sequence for rice bran powder (RBP).