

Art no: 05-0115

# CERTIFICATE OF ANALYSIS

Lot no: 292705



**Intertek**

Product name:	<b>PHA-P (Phytohemagglutinin P)</b>
Production date:	2023-07
Date of release:	2024-01-29
Stability:	2028-07
Source:	<i>Phaseolus Vulgaris</i> beans (Red Kidney Beans)
Form:	Lyophilized
Storage:	-18 °C (may be shipped at ambient temp)

Analysis	Specification	Result
Appearance	White to cream coloured powder or flocculate	Pass
Solubility	1 mg/ml in PBS	Pass
Protein content	> 85 % (A280) ε 1mg/ml = 1,14	90,6 %, Pass
Purity	≥ 90% (SDS-PAGE)	Pass
Microbiology	< 100 CFU/g	Pass
Activity	Agglutinates human blood group 0 at a concentration ≤ 4 µg/mL	Pass
Identity	One major band compare to reference (SDS-PAGE)	Pass

Appendixes:  
1. SDS-PAGE  
2. Haemagglutination

The above material has met all quality specifications and has been reviewed by a quality representative.

Quality Assurance, Asa Engström

2024-01-29



**Appendix 1. SDS-PAGE**

**Bilaga 1, tillhör M-00230  
SDS PAGE, analysis of PHA-P lot 292705**

Electrophoresis with Pharmacia Phastsystem (Amersham Biosciences)

**Material**

Phast gel gradient 8 – 25  
Phast gel SDS buffer strips

**Method**

The proteins were dissolved to 2 mg/ml 1:1 in PBS and loading buffer (10 mM TRIS/HCL, 1 mM EDTA, 2.5 % SDS, 50 mM DTT).

LMW marker was from LMW SDS calibration kit for SDS electrophoresis (GE Healthcare).

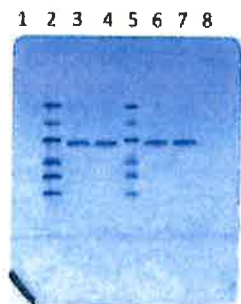
MW of proteins included in LMW (14 000 Da - 97 000 Da) marker:

Phosphorylase b	97 000
Albumin	66 000
Ovalbumin	45 000
Carbonic anhydrase	30 000
Trypsin inhibitor	20 100
α-Lactalbumin	14 400

The samples were heated for 5 min. and approx. 1 µl was applied on Phast gel (gradient 8 – 25).  
Program; 300v, 7.5 mA, 2.0 Wh, 80 Vh.

The gels were stained with Coomassie blue for 30 min and then destained.

**Result**



Lane 1,8	Empty
Lane 2, 5	LMW lot 290717
Lane 3, 4	PHA-P lot 292705 (Prove)
Lane 6, 7	PHA-P lot 240804 (reference)
Lane 8	Empty

Analysis performed by

*Salah Ahmed*  
2023-07-17  
Salah Ahmed / 2023-07-17

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## Appendix 2. Haemagglutination

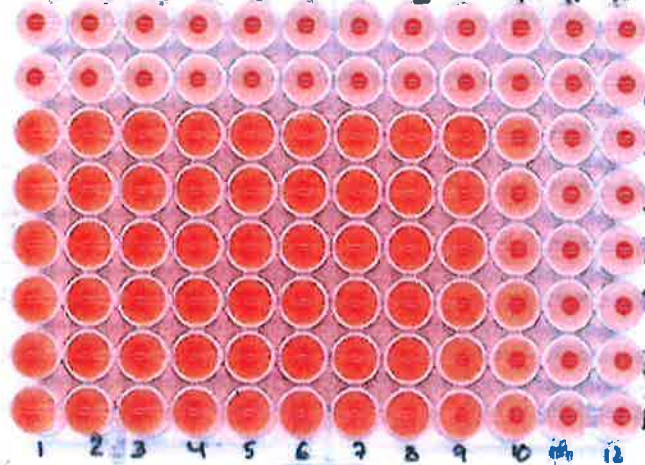
Bilaga 1, tillhör M-00030

### Haemagglutination (human blood group 0)

Lectin from *Phaseolus vulgaris* (red kidney bean),

Phytohemagglutinin PHA-P Art.nr: 05-0115, lot: 292705.

Column	1	2	3	4	5	6	7	8	9	10	11	12
Titer	0	2	4	8	16	32	64	128	256	512	1024	2048
Conc	500	250	126	63	31	16	7.8	3.9	2.0	1.0	0.5	0.2 µg/ml



Row A, B      Blank  
Row C-H      PHA-P lot 292705

Signature: Cynthia Hassinen

Cynthia Hassinen, 2023-07-18