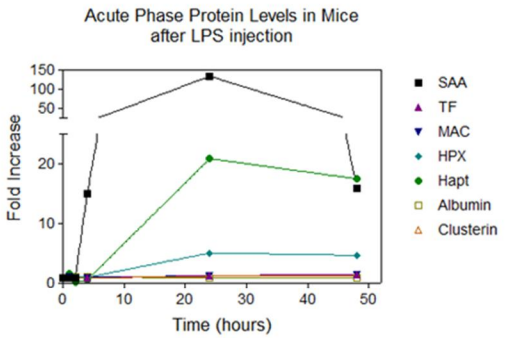
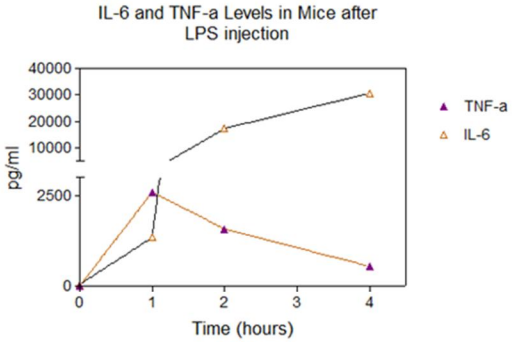
# Acute Phase Response in Mice

**Summary**

Levels of several acute phase proteins and cytokines (IL-6 and TNF-alpha) were measured in serum from Balb/c mice after injection of lipopolysaccharide (LPS). Mice (~20g, n=5 per time point) were injected (i.p.) with LPS (1 mg/kg) dissolved in phosphate-buffered saline. At the times indicated, blood was drawn and serum prepared. Acute phase protein and cytokine levels were evaluated using ELISA kits manufactured by Life Diagnostics, Inc.




| Time (h) | Fold change of rat acute phase biomarkers after LPS injection | | | | | | |
|---|---|---|---|---|---|---|---|
| | SAA | Clusterin | TF | MAC | HPX | Hapt | Albumin |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1.2 | 1 | 1.1 | 1.1 | 1.6 | 1.1 |
| 2 | 1 | 1 | 1 | 1 | 1.1 | 0.2 | 1.1 |
| 4 | 15 | 0.9 | 0.9 | 1 | 1 | 0.6 | 1.1 |
| 24 | 134 | 1.2 | 1.3 | 1.3 | 5.1 | 20.9 | 0.9 |
| 48 | 16 | 1.3 | 1.5 | 1.4 | 4.7 | 17.5 | 1 |

| Time (h) | Cytokine (pg/ml) | |
|---|---|---|
| | IL-6 | TNF-a |
| 0 | 49 | 0 |
| 1 | 1344 | 2595 |
| 2 | 17325 | 1574 |
| 4 | 30712 | 547 |
| 24 | 210 | 0 |
| 48 | 102 | 0 |

SAA: serum amyloid A, TF: transferrin, MAC: alpha-macroglobulin, HPX: hemopexin, Hapt: haptoglobin

Baseline values. SAA: 0.78 ug/ml*, clusterin: 9.4 µg/ml, transferrin: 2.48 mg/ml, alpha-macroglobulin: 1.51 mg/ml, hemopexin: 0.41 mg/ml, haptoglobin, 0.075 mg/ml. *limit of detection

**Comments**

In a mouse LPS model, SAA and haptoglobin are excellent positive acute phase protein biomarkers, with peak levels reaching 134 and 21-fold greater than baseline values after 24 h. IL-6 and TNF-alpha are cytokines involved in the initiation of the acute phase response and as expected, both increase significantly within 1 h of LPS challenge. Both cytokines are robust early-stage biomarkers of inflammation and tissue injury.

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