Abstract: The chemoattractants, fMLP and PAF, stimulate glucose uptake in phagocytes to obtain an energy source for host defense. Glucose uptake in phagocytes is mainly regulated via glucose transporter type 1 (GLUT1). To examine molecular mechanisms of facilitated glucose uptake in response to fMLP or PAF, we established CHO cells stably expressing fMLP or PAF receptor with c-myc epitope tagged GLUT1 which could immunologically detect GLUT1 on the cell surface. In the CHO cells, both fMLP and PAF directly triggered GLUT1 translocation from the intracellular pool to the cell surface, and stimulated glucose uptake. Therefore, in phagocytes, we propose that fMLP and PAF also trigger GLUT1 translocation to stimulate glucose uptake as an energy source for host defense. J. Med. Invest. 47: 19-28, 2000

Keywords: fMLP; PAF; glucose transport; GLUT1; G-protein coupled receptor
Establishment of stable cell lines specifically expressing G-protein coupled receptors

Assay for 2-DG uptake by phagocytes and CHO cells

Cell surface anti-c-myc antibody binding assay (GLUT1 translocation assay)
Detection of Akt kinase activation

fMLP and PAF stimulate glucose uptake in phagocytes

Polymorphonuclear Leukocytes (PMNs)

![Graphs showing fMLP and PAF treatment effects on glucose uptake](image)
Macrophages

fMLP or PAF stimulated GLUT1 translocation in CHO cells

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