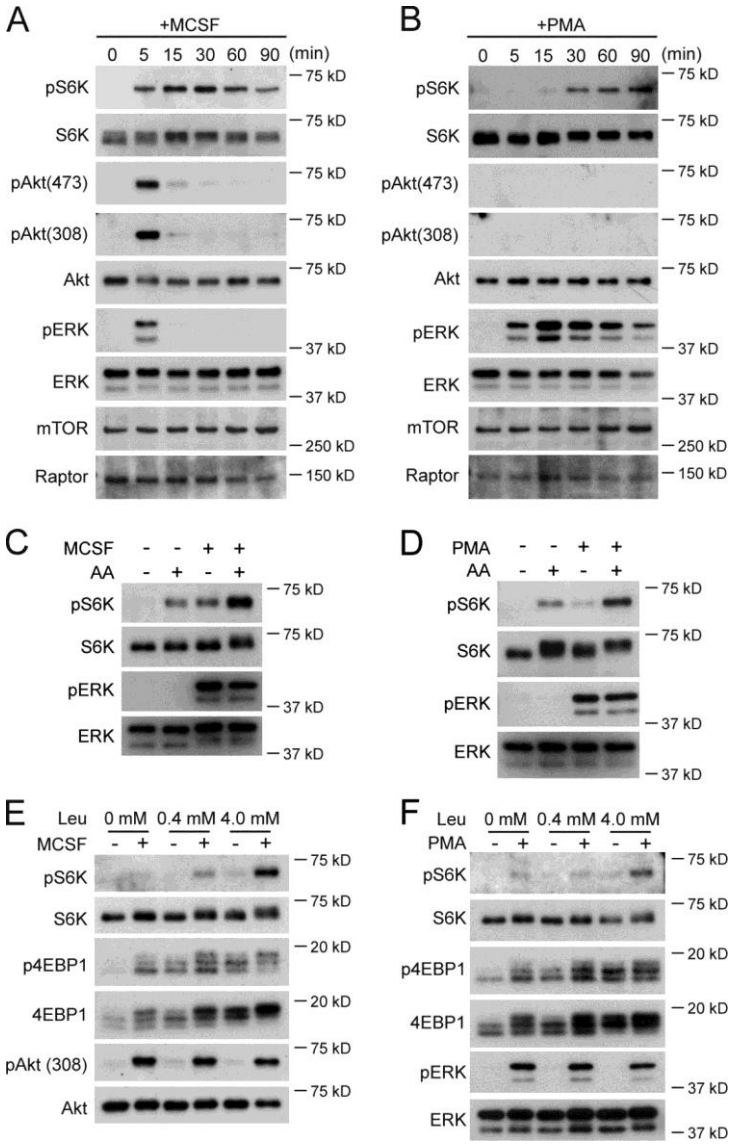
Amino acids increase activation of mTORC1 by M-CSF and PMA in macrophages.



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Amino acids increase activation of mTORC1 by M-CSF and PMA in macrophages. (A) Time course of signaling in BMMs after stimulation with M-CSF. mTORC1 activity, as indicated by phosphorylation of S6K (pS6K), increased within 5 min and remained elevated. PI3K (pAkt-308), mTORC2 (pAkt-473), and MEK/ERK (pERK) were activated transiently. (B) Time course of signaling in response to PMA. MEK/ERK activity increased quickly, whereas mTORC1 was activated after a delay. PI3K and mTORC2 were not activated. (C and D) Relative to amino acid–depleted medium (HBSS, −), amino acid–rich medium (DMEM, +) increased mTORC1 activation in response to M-CSF (5-min stimulation; C) and PMA (30-min stimulation; D), but did not affect stimulation of MEK/ERK in response to either stimulus. (E and F) The addition of leucine to DPBS was sufficient to augment activation of mTORC1 by M-CSF (E) or PMA (F), as indicated by phosphorylation of S6K and 4EBP1, but did not alter stimulation of PI3K by M-CSF or of MEK/ERK by PMA.