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Human neutrophils incorporate arachidonic acid and saturated fatty acids into separate molecular species of phospholipids

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Abstract

The incorporation of radiolabeled arachidonic acid and saturated fatty acids into choline-linked phospho-glycerides (PC) of rabbit and human neutrophils was investigated by resolving the individual molecular species by reversed-phase high performance liquid chromatography. PC from neutrophils incubated with a mixture of [³H] arachidonic acid and [¹⁴C]stearic or [¹⁴C]palmitic acid contains both radiolabels; however, double labeling of individual molecular species is minimal. After labeling for 2 h, the [³H]arachidonate is distributed almost equally between diacyl and 1-*O-alkyl-2-acyl* species, but it is incorporated into diacyl species containing unlabeled stearate or palmitate at the *sn*-1 position. In contrast, labeled saturated fatty acids are incorporated only into diacyl

species and contain predominantly oleate and linoleate at the *sn*-2 position. Labeled linoleate is not incorporated into ether-linked species, but is found in the same species as labeled stearate. The findings suggest that mechanisms exist in neutrophils for specific shunting of exogenous arachidonic acid into certain phospholipid molecular species and support the concept that the 1-*O-alkyl-2-arachidonoyl* species may be a functionally segregated pool of arachidonic acid within the PC of neutrophils.



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Keywords

Arachidonic acid; Phospholipid molecular species; HPLC; (Neutrophil)

Abbreviations

PMN, polymorphonuclear neutrophils; GPC, *sn-glycero-3-phosphocholine*; PI, inositol-linked phospho-glyceride fraction; PC, choline-linked phosphoglyceride fraction; PE, ethanolamine-linked phosphoglyceride fraction

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