Incorporación, remodelación y movilización de ácido docosahexaenoico en macrófagos peritoneales de ratón

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En este trabajo se ha investigado la incorporación de ácido docosahexaenoico (DHA) en macrófagos peritoneales residentes en ratones y su redistribución dentro de las diversas clases de fosfolípidos. Los glicerofosfolípidos (PC) de colina se comportaron como los principales aceptores iniciales de DHA. La incubación prolongada con el ácido graso resultó en la transferencia de DHA de PC a glicerofosfolípidos de etanolamina (PE), lo que refleja remodelación de fosfolípidos. Este proceso dio como resultado que las células contuvieran cantidades similares de DHA en PC y PE en estado de reposo. Los análisis lipidómicos basados en espectrometría de masas de especies moleculares de fosfolípidos indicaron una marcada abundancia de DHA en los fosfolípidos con enlaces éter. La estimulación de los macrófagos con zimosán dio como resultado disminuciones significativas de los niveles de todas las especies de PC y PI que contienen DHA; sin embargo, no se encontró que ninguna especie molecular de PE o PS disminuyera. Por el contrario, se encontró que los niveles de una especie inusual que contiene DHA, a saber, PI (20:4/22:6), que apenas estaba presente en las células en reposo, aumentaban notablemente bajo la estimulación con zimosano. Los niveles de este fosfolípido también aumentaron significativamente cuando se utilizó el ionóforo de calcio A23187 o el factor activador de plaquetas en lugar de zimosan para estimular los macrófagos. El estudio de la ruta involucrada en la síntesis de PI(20:4/22:6) sugiere que esta especie se produce mediante reacciones de desacilación/reacilación. Estos resultados definen los aumentos en PI(20:4/22:6) como un nuevo marcador metabólico lipídico de la activación de macrófagos y proporcionan información novedosa para comprender la regulación del recambio de ácidos grasos en los fosfolípidos de macrófagos activados.

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