Liberación y metabolismo del ácido palmitoleico y sus isómeros posicionales en macrófagos de ratón

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October 15, 2020

Los isómeros posicionales del ácido hexadecenoico han demostrado poseer propiedades antiinflamatorias. El más conocido de ellos, el ácido palmitoleico (ácido cis-9-hexadeenoico, 16:1n-7), ha sido identificado como una lipoquina con importantes acciones beneficiosas en enfermedades metabólicas, y el ácido hipogeico (ácido cis-7-hexadecenoico, 16:1n-9) puede ser considerado como un posible biomarcador de la formación de células espumosas durante la aterosclerosis. A pesar de la importancia de estos isómeros como posibles reguladores de las respuestas inflamatorias, se sabe muy poco sobre la regulación de sus niveles y distribución y movilización entre los diferentes grupos de lípidos dentro de la célula. En este trabajo se describe que la mayor parte de los ácidos grasos hexadecenoicos que se encuentran en los macrófagos peritoneales de ratón se esterifican en una especie única de fosfatidilcolina, que contiene ácido palmítico en la posición sn-1, y ácido hexadecenoico en la posición sn-2. Esta especie disminuye notablemente cuando los macrófagos se activan con estímulos inflamatorios, en paralelo con la movilización neta de ácido hexadecenoico libre. Utilizando inhibidores farmacológicos y silenciamiento génico, demostramos que los ácidos hexadecenoicos son liberados selectivamente por la fosfolipasa A_2 independiente de Ca^{2+} de grupo VIA en condiciones de activación. Mientras que la mayoría del ácido hexadecenoico liberado se acumula en forma libre, una parte significativa también se transfiere a otros fosfolípidos para formar fosfolípidos de inositol que contienen hexadecenoato. También se utiliza para formar ésteres de ácidos grasos con hidroxiácidos grasos, compuestos con propiedades antidiabéticas y antiinflamatorias. Colectivamente, estos datos revelan nuevas vías y mecanismos para la utilización de ácido palmitoleico y sus isómeros bajo condiciones inflamatorias, y sugieren que parte de la actividad antiinflamatoria de dichos ácidos grasos puede deberse a su conversión en otros mediadores lipídicos.

Financiación: Ministerio de Economía, Industria y Competitividad (SAF2016-80883-R)
Ministerio de Ciencia e Innovación (PID2019-105989RB-I00)

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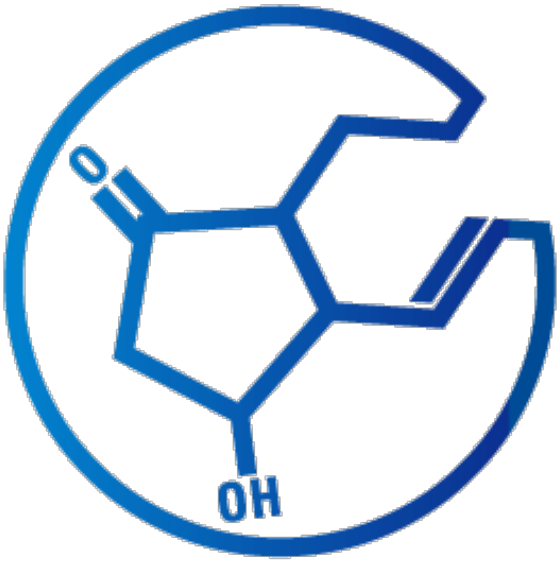

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