

3, 3'-Diindolylmethane Attenuates Allergic Rhinitis by Subduing Interleukin-13-triggered JME/CF15 Human Nasal Epithelial Cells Inflammation

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SUMMARY. Allergic rhinitis (AR) is a chronic, characteristic allergic syndrome that affects the upper airways of the nasal mucosa. The interleukin (IL)-13 signaling has been involved in the pathogenesis of AR. 3, 3'-Diindolylmethane (DIM) is an antitumor bioactive component resulting from the acid-condensation product of indole-3-carbinol (I3C), originating in the Brassica vegetation. Although DIM is known for anti-inflammatory actions on many disorders, the role of DIM on AR is quiet unidentified. Hence, the current research was to consider the anti-inflammatory activities of DIM on IL-13 prompted in human nasal epithelial cells (HNECs). JME/CF 15 cells were pretreated with varied concentrations of DIM followed by IL-13 induced AR. In this study, we carried out *in vitro* analysis such as, cytotoxicity assay, ROS, apoptosis, inflammatory mediators, cytokines expressions of mRNA, and protein of DIM activity on HNECs cells were evaluated by CCK-8 assay, DCFH-DA, DAPI, ELISA, RT-qPCR, and western blot analysis. Our results found that DIM (5, 10, 20, and 30 μ M) showed anti-proliferative effects on the JME/CF 15 cells in a concentration-dependent manner. DIM noticeably reduces ROS, apoptosis, eotaxin, IL-8, IL-6, and GM-CSF established on DIM concentration. The outcomes propose that DIM may act as an anti-inflammatory agent to recover the AR symptoms by attenuating the nasal epithelial inflammatory response.

RESUMEN. La rinitis alérgica (RA) es un síndrome alérgico crónico y característico que afecta las vías respiratorias superiores de la mucosa nasal. La señalización de la interleucina (IL)-13 ha estado involucrada en la patogenia de la RA. El 3,3'-diindolilmetano (DIM) es un componente bioactivo antitumoral resultante del producto de condensación ácida del indol-3-carbinol (I3C), originario de la vegetación Brassica. Aunque DIM es conocido por sus acciones antiinflamatorias en muchos trastornos, el papel de DIM en AR aún no está identificado. Por lo tanto, la investigación actual fue considerar las actividades antiinflamatorias de DIM en IL-13 en células epiteliales nasales humanas (HNEC). Las células JME/CF 15 se pretrataron con concentraciones variadas de DIM seguidas de AR inducida por IL-13. En este estudio, llevamos a cabo análisis *in vitro* como, ensayo de citotoxicidad, ROS, apoptosis, mediadores inflamatorios, expresiones de citocinas de ARNm y proteína de actividad DIM en células HNEC evaluadas mediante ensayo CCK-8, DCFH-DA, DAPI, Análisis ELISA, RT-qPCR y western blot. Nuestros resultados encontraron que DIM (5, 10, 20 y 30 μ M) mostró efectos antiproliferativos en las células JME/CF 15 de una manera dependiente de la concentración. DIM reduce notablemente ROS, apoptosis, eotaxina, IL-8, IL-6 y GM-CSF establecidos en la concentración de DIM. Los resultados proponen que DIM puede actuar como un agente antiinflamatorio para recuperar los síntomas de AR al atenuar la respuesta inflamatoria epitelial nasal.

KEY WORDS: allergic rhinitis, apoptosis, cytokines, 3, 3'-diindolylmethane, inflammation.

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