以小鼠食物過敏模式探討馬尾藻多醣、寡醣及藻渣改善過敏性下痢及腸道菌叢失衡

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2022/5/18

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摘要

典型的食物過敏為一種免疫失調疾病，其機制為過敏原使 Th2 過度分化導致體內 T helper (Th) 1/Th2 失衡，造成各項發炎因子濃度提升並導致腸道組織腫脹及下痢等症狀，且使腸道菌叢失衡。馬尾藻 (*Sargassum* spp.) 為褐藻，主要分布於熱帶及亞熱帶沿岸海域，為東南亞地區之重要經濟作物，而馬尾藻多醣及寡醣具免疫調節、抗氧化及抗發炎等多種生物活性。故本研究以小鼠食物過敏模式探討馬尾藻多醣、寡醣及藻渣減緩過敏性下痢及調節腸道菌叢之功效。馬尾藻多醣、寡醣及藻渣投予食物過敏小鼠後下痢嚴重程度有所改善，並減緩腸道組織破損及肥大細胞浸潤等病理變化。分析血清中抗體含量可知過度分泌之 OVA-Immunoglobulin (Ig) E 顯著下降，並顯著提升具減緩過敏反應之 OVA- IgG 濃度。此外，其顯著抑制 Th2 相關之 Interleukin (IL)-4 含量並使 Th1 介導之 Interferon (IFN)-γ 顯著上升，亦具使免疫調節之 IL-10 含量顯著增加之作用，證實馬尾藻多醣、寡醣及藻渣可調節因食物過敏失衡之 Th1/Th2 平衡。分析各組小鼠之腸道菌叢可知馬尾藻多醣、寡醣及藻渣可影響腸道菌種之組成，使各組間之差異性增大。以香濃指標評估馬尾藻多醣、寡醣及藻渣對組內多樣性之影響，可知每日經口頭予馬尾藻多醣、寡醣及藻渣可改善因食物過敏導致之菌叢變化，並使其菌叢豐富度與正常小鼠相似。分析各組菌種相對豐富度，推測馬尾藻多醣及寡醣可藉由促進 *Bacteroides acidifaciens* 生長使肥大細胞分泌之發炎因子下降達到減緩過敏之功效，而馬尾藻藻渣可能具誘導 *Akkermansia muciniphila* 生長之作用並改善免疫失調以減緩下痢之嚴重性。預期馬尾藻多醣、寡醣及藻渣未來能應用在食物過敏的預防及治療。

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