

Abstract

J Nutr. 2008 Dec;138(12):2481-6.

Combined glutamine and arginine decrease proinflammatory cytokine production by biopsies from Crohn's patients in association with changes in nuclear factor-kappaB and p38 mitogen-activated protein kinase pathways.

Lecleire S, Hassan A, Marion-Letellier R, Antonietti M, Savoye G, Bôle-Feysot C, Lerebours E, Ducrotté P, Déchelotte P, Coëffier M.

Appareil Digestif Environnement Nutrition EA4311, Institute for Biomedical Research, IFRMP23, Rouen University and Rouen University Hospital, Rouen, France.

BACKGROUND: Glutamine (Gln) and arginine (Arg) are conditionally essential amino acids with immunomodulatory properties.

OBJECTIVE: The aim of the study was to assess the effects of Gln and Arg alone or in combination on cytokine release by cultured colonic biopsies from patients with active **Crohn's disease (CD)**.

METHODS: Ten consecutive patients [mean (range) age 26 (18-39) y] with active colonic CD (mean CD activity index: 383.7 +/- 129.8) were prospectively included in the study. Eight colonic biopsies were obtained via a colonoscopy and incubated during 18 h with low (physiological) or high (pharmacological) doses of Arg (0.1 or 2 mmol/L designated as Arg(low) or Arg(high), respectively) and Gln (0.6 or 10 mmol/L designated as Gln(low) or Gln(high), respectively). The concentrations of cytokines [interleukin (IL)-4, IL-10, IL-8, IL-6, tumor necrosis factor-alpha (TNFalpha), IL-1beta, interferon-gamma] were assessed by ELISA, and nitric oxide (NO) production was evaluated by Griess assay. Nuclear factor (NF)-kappaB p65 subunit, inhibitor of NFkappaB-alpha, and p38 mitogen-activated protein kinase (MAPK) were assessed by immunoblotting.

RESULTS: Arg(high)/Gln(high) decreased the production of TNFalpha, IL-1beta, IL-8, and IL-6 (each $P < 0.01$). Arg(low)/Gln(high) decreased IL-6 and IL-8 production (both $P < 0.01$), whereas Arg(high)/Gln(low) did not affect cytokine and NO production. Arg(low)/Gln(high) and Arg(high)/Gln(high) decreased NF-kappaB p65 subunit expression, whereas p38 MAPK was decreased only by Arg(high)/Gln(high). **Combined pharmacological doses of Arg and Gln decreased TNFalpha and the main proinflammatory cytokines release in active colonic CD biopsies via NF-kappaB and p38 MAPK pathways.**

CONCLUSION: These results could be the basis of prospective studies evaluating the effects of enteral supply of combined Arg and Gln during active CD.

PMID: 19022976