

BIOACTIVE COMPOUNDS OF FOOD AND IMMUNITY

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Numerous vitamins and minerals have a critical role in supporting innate and adaptive immune systems. The European Food Safety Authority (EFSA) has approved health claims for vitamins A, B6, folate, B12, C and D and minerals Zn, Se, Fe and Cu based on scientific evidence of their contribution to the normal immune system functioning. Existing evidence suggests their role in maintaining physical barriers (i.e., skin, mucose membranes), cellular response, regulation of inflammation, proliferation and differentiation of T and B cells (1). In addition to essential nutrients, other bioactive ingredients such as alpha-lipoic acid, quercetin, probiotics, and omega-3 fatty acids, stimulate the immune response. Vitamin C maintains redox homeostasis and protects cells from oxidative damage, regenerates other essential antioxidants (glutathione, vitamin E), modulates cytokine production and reduces histamine levels. Vitamin D appears to increase the oxidative potential of macrophages, reduce pro-inflammatory, and increase the expression of anti-inflammatory cytokines. The minerals Zn, Se, and Mg are involved in antibody production, metabolism, and immune tolerance (2). Omega-3 fatty acids are precursors of signaling molecules and specialized mediators that initiate the resolution of inflammation. Probiotics affect the innate and adaptive immune response by regulating the functions of immune cells and reducing inflammation. Due to its ability to mediate inflammatory pathways, alpha-lipoic acid seems to be helpful in the prevention and treatment of many diseases. Quercetin promotes increasing antioxidant enzymes and non-enzymatic antioxidants and the expression of specific pro-inflammatory mediators and chemokines. All mentioned bioactive compounds have promising effects in the promotion of immune response.

References

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BIOAKTIVNI SASTOJCI HRANE I IMUNITET

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Brojni vitamini i minerali imaju ključnu ulogu u funkcionisanju urođenog i adaptivnog imunskog sistema. Evropska agencija za bezbednost hrane (EFSA) je odobrila zdravstvene izjave za vitamine A, B6, folate, B12, C i D i minerale Zn, Se, Fe i Cu na osnovu naučnih procena njihovog doprinosa normalnom funkcionisanju imunskog sistema. Učestvuju u održavanju fizičke barijere (koža, mukozne membrane), celularnom odgovoru, regulaciji inflamacije, proliferaciji i diferencijaciji B i T ćelija (1). Pored esenijalnih nutrijenata i drugi bioaktivni sastojci kao što su alfa-lipoinjska kiselina, kvercetin, probiotici, omega-3 masne kiseline, stimulišu imunološki odgovor. Vitamin C održava redoks homeostazu i štiti ćelije od oksidativnog oštećenja, regeneriše druge važne antioksidanse (glutation, vitamin E), moduliše produkciju citokina i smanjuje nivo histamina. Vitamin D povećava oksidativni potencijal makrofaga, redukuje ekspresiju proinflamatornih i povećava ekspresiju antiinflamatornih citokina. Minerali Zn, Se, Mg su važni u proizvodnji i metabolizmu antitela i u održavanju imunološke tolerancije (2). Omega-3 masne kiseline su prekursori signalnih molekula i specijalizovanih medijatora koji iniciraju rezoluciju inflamacije. Omega-3 masne kiseline moduliraju neke od funkcija imunskih ćelija kao što su makrofage i neutrofile, aktiviraju antigen-specifične odgovore stvarajući antitela i dugotrajnu zaštitu specifičnu za isti patogen. Probiotici utiču na urođeni i adaptivni imunski odgovor tako što regulišu funkcije imunskih ćelija i smanjuju upalne procese. Zbog svoje sposobnosti da posreduje u inflamatornim putevima, alfa-lipoinjska kiselina ima ulogu u prevenciji i lečenju mnogih oboljenja. Kvercetin promoviše povećanje antioksidativnih enzima i neenzimskih antioksidanasa, kao i ekspresiju specifičnih proinflamatornih medijatora i hemokina. Sva navedena biološki aktivna jedinjenja pokazuju značajan potencijal u imunološkom odgovoru.

Literatura

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