Table 1. Summary of the effects of various micronutrients on different aspects of immunity. Abbreviations used: IFN, interferon; IL, interleukin; NK, natural killer; Th, T helper; TNF, tumour necrosis factor. Reproduced from reference 6 (CC BY licence).

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| Micronutrient | Role in barrier function | Role in cellular aspects of innate immunity | Role in T-cell mediated immunity | Role in B-cell mediated immunity |
| Vitamin A | Promotes differentiation of epithelial tissue; Promotes gut homing of B and T cells; Promotes intestinal immunoglobulin A+ cells; Promotes epithelial integrity | Regulates number and function of NK cells; Supports phagocytic and oxidative burst activity of macrophages | Regulates development and differentiation of Th1 and Th2 cells; Promotes conversion of naïve T cells to regulatory T cells; Regulates IL-2, IFN-g and TNF production | Supports function of B cells; Required for immunoglobulin A production  |
| Vitamin B6 | Promotes gut homing of T cells | Supports NK cell activity | Promotes T-cell differentiation, proliferation and function, especially Th1 cells; Regulates (promotes) IL-2 production | Supports antibody production |
| Vitamin B9 (Folate) | Survival factor for regulatory T cells in the small intestine | Supports NK cell activity | Promotes proliferation of T cells and the Th1 cell response | Supports antibody production |
| Vitamin B12  | Important cofactor for gut microbiota | Supports NK cell activity | Promotes T cell differentiation, proliferation and function, especially cytotoxic T cells; Controls ratio of T helper to cytotoxic T cells | Required for antibody production |
| Vitamin C | Promotes collagen synthesis; Promotes keratinocyte differentiation; Protects against oxidative damage; Promotes wound healing; Promotes complement | Supports function of neutrophils, monocytes and macrophages including phagocytosis; Supports NK cell activity | Promotes production, differentiation and proliferation of T cells especially cytotoxic T cells; Regulates IFN-g production | Promotes antibody production |
| Vitamin D | Promotes production of antimicrobial proteins (cathelicidin, b-defensin); Promotes gut tight junctions (via E-cadherin, connexin 43); Promotes homing of T cells to the skin | Promotes differentiation of monocytes to macrophages; Promotes macrophage phagocytosis and oxidative burst | Promotes antigen processing but can inhibit antigen presentation; Can inhibit T cell proliferation, Th1 cell function and cytotoxic T cell function; Promotes the development of regulatory T cells; Inhibits differentiation and maturation of dendritic cells; Regulates IFN-g production | Can decrease antibody production |
| Vitamin E | Protects against oxidative damage | Supports NK cell activity | Promotes interaction between dendritic cells and T cells; Promotes T cell proliferation and function, especially Th1 cells; Regulates (promotes) IL-2 production | Supports antibody production |
| Zinc | Maintains integrity of the skin and mucosal membranes; Promotes complement activity | Supports monocyte and macrophage phagocytosis; Supports NK cell activity | Promotes Th1 cell response; Promotes proliferation of cytotoxic T cells; Promotes development of regulatory T cells; Regulates (promotes) IL-2 and IFN-g production; Reduces development of Th9 and Th17 cells | Supports antibody production particularly immunoglobulin G |
| Copper |  | Promotes neutrophil, monocyte and macrophage phagocytosis; Supports NK cell activity | Regulates differentiation and proliferation of T cells; Regulates (promotes) IL-2 production |  |
| Iron | Essential for growth and differentiation of epithelial tissue | Promotes bacterial killing by neutrophils; Regulates balance of M1 and M2 macrophages; Supports NK cell activity | Regulates differentiation and proliferation of T cells; Regulates IFN-g production |  |
| Selenium |  | Supports NK cell activity | Regulates differentiation and proliferation of T cells; Regulates (promotes) IFN-g production | Supports antibody production  |