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IMMUNOMETABOLISM: HOW BIOCHEMICAL PROCESSES CONTROL IMMUNE RESPONSES OF LEUKOCYTES

Summary

In recent years, a new branch of immunology called immunometabolism has been established. The discipline focuses on intracellular metabolic changes in immune cells that impact – influence their survival, development, as well as defense mechanisms. Here we provide a brief summary of basic and ancillary metabolic pathways which leukocytes utilize to obtain energy, with a special focus on glycolysis, TCA cycle, penthosophosphate pathway and fatty acid oxidation. Significance of the given metabolic path for leukocyte functioning, phenotype changes (e.g. M1 *vs.* M2 macrophages) and biochemical changes during activation is discussed. The metabolic changes can in fact shape the effector functions during inflammation, infection or tissue injury. On the other hand, leukocytes can adopt different metabolic programs to gain energy required to eliminate pathogens. An interplay between immunity and metabolism sheds new light on understanding of metabolic diseases but foremost on complex immune responses.

Key words: adaptive immunity, innate immunity, lymphocytes, macrophages, metabolic pathways, neutrophils