



Editorial

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Role of 5'-AMP-Activated Protein Kinase Activators in Regulating Nuclear Factor Kappa B Signaling

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The role of nuclear factor kappa B (NF- κ B) is well known in immunity, inflammation, and cancer. Because NF- κ B is associated with various diseases, such as arthritis, atherosclerosis, asthma, diabetes, and inflammatory bowel disease, many studies have focused on the IKK kinase (IKK)/NF- κ B pathway as a treatment target [1]. In the bladder urothelium, NF- κ B is associated with interstitial cystitis (IC) and bladder cancer. IC occurs as a result of inflammation and disruption of urothelium integrity. In addition, bladder inflammation induced by lipopolysaccharide (LPS) is mediated by the IKK/NF- κ B pathway, and studies have shown that down regulation of NF- κ B, using anti-inflammatory drugs, can aid in treating such inflammation [2,3]. However, anti-inflammatory drug use aimed at reducing the symptoms of IC has yielded no significant results in true clinical practice.

LPS- and hypoxia-induced IKK-complex-mediated NF- κ B phosphorylation of the human bladder cancer cell line was reduced by a 5'-AMP-activated protein kinase (AMPK) activator, 5'-aminoimidazole-4-carboxamide ribonucleotide; therefore, AMPK activators may be one of the treatment drugs to regulate the IKK/NF- κ B pathway [4]. AMPK presented close association with inflammation, and decreased AMPK activity is linked to increased inflammation induced by various types of insults [5]. Up-regulation of NF- κ B signaling is one of underlying mechanisms associated with IC; therefore, AMPK activators may alleviate symptoms of IC by decreased NF- κ B activity.

Various types of diseases presenting different characteristics sometimes share the same underlying pathophysiologic mechanism. The NF- κ B signaling pathway plays a role in immune, inflammatory, and metabolic diseases as well as cancer. Moreover,

such diseases are not caused by a single pathophysiology but instead, a complex of various mechanisms. Therefore, the pathophysiology of neurourology can often be understood through the findings from research on other human diseases, including cancer. Keeping an open mind regarding the mechanisms underlying various other diseases can improve the insight in the field of neurourology.

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