

[Open Peer Review on Qeios](#)

# Acadesine

National Cancer Institute

## Source

National Cancer Institute. *Acadesine*. NCI Thesaurus. Code C71537.

A 5-aminoimidazole-4-carboxamide (AICA) riboside, a ribnucleoside analog, and a nucleotide biosynthesis precursor with B cell pro-apoptotic activity. Following cellular uptake, acadesine is phosphorylated to AICA ribotide (ZMP), which mimics 5'-adenosine monophosphate (AMP). Both AMP-activated protein kinase (AMPK) and AMPK kinase (AMPKK) are activated by ZMP, which appears to be necessary for the induction of apoptosis. Acadesine-induced apoptosis also appears to require cytochrome c release from mitochondria and caspase activation and is p53-independent. However, the exact mechanism of acadesine-induced apoptosis is unknown. T cells are significantly less susceptible than B cells to acadesine-induced apoptosis. AMPK regulates several cellular systems including the cellular uptake of glucose, the beta-oxidation of fatty acids, protein synthesis, and the biogenesis of glucose transporter 4 (GLUT 4) and mitochondria.