ISOINDOLINE DERIVATIVES SUCH AS AMPK ACTIVATORS

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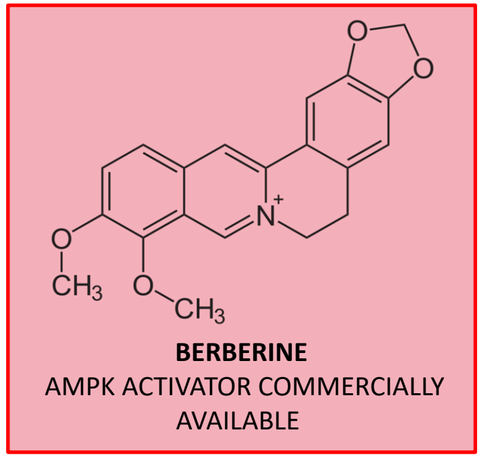
Invention

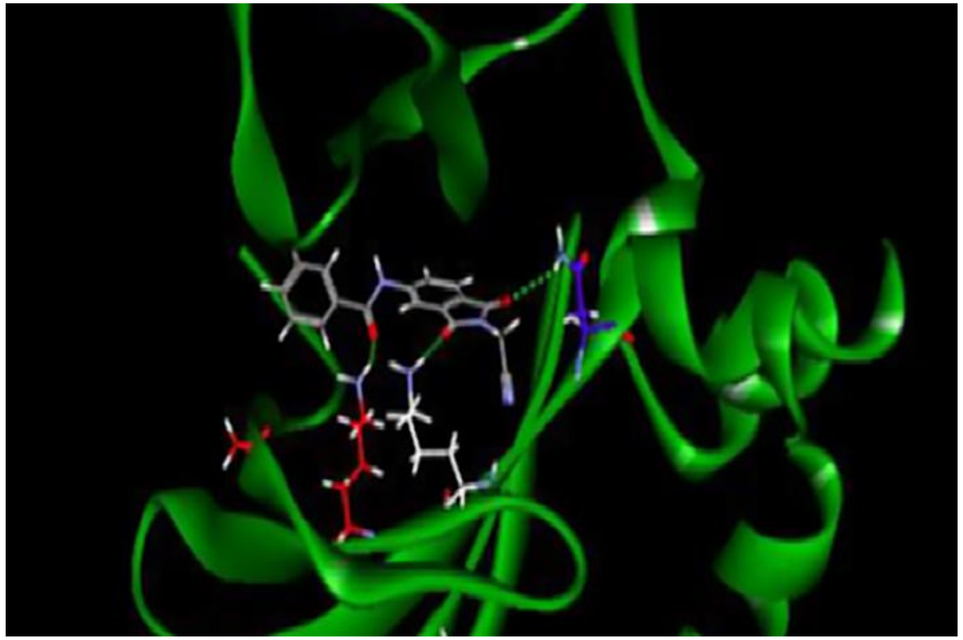
The present invention relates to the development of **novel isoindoline derivatives as activators of AMPK (Adenosine MonoPhosphate-activated protein Kinase)**, a key enzyme in cellular metabolism. The compounds, with original chemical structure, can be usefully employed for the prevention and treatment of **metabolic disorders, such as type II diabetes and obesity, as well as immune-mediated inflammatory diseases and cancer**.

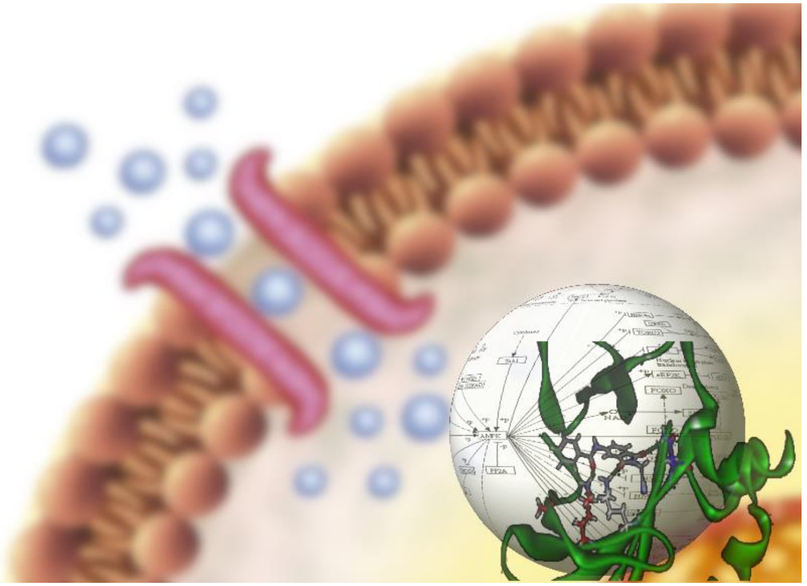
AMPK plays a key role in the regulation of cellular energy homeostasis, activating in response to stresses that reduce cellular ATP availability. It also ccritically ontributes to the modulation of immune/inflammatory functions of cells and hinders carcinogenesis by intervening in the metabolic state of rapidly proliferating cells. AMPK thus represents a valuable therapeutic target for the treatment of metabolic disorders but also immune-mediated inflammatory diseases and cancer.

Drawings & pictures



BERBERINE
AMPK ACTIVATOR COMMERCIALLY AVAILABLE





Industrial applications

POSSIBLE APPLICATIONS

- Prophylaxis and therapy of immune-mediated inflammatory diseases;
- Prophylaxis and therapy of type 2 diabetes;
- Prophylaxis and therapy of obesity;
- Prophylaxis and therapy of cancer.

ADVANTAGES

- Newly synthesized, stable and water-soluble original molecules;
- Obtained from simple chemical substrates by efficient, economical and sustainable synthetic processes;
- Characterized by good bioavailability and tolerability.

Possible developments

The new patent isoindoline derivatives were designed to interact directly with AMPK, triggering its activation.

Data obtained *in vitro* showed a significant increase in phosphorylation of AMPK, at a concentration of 10 µM, inducing a more potent stimulatory effect than that shown by Berberine (BBR), a commercially available AMPK activator, assayed at the same concentration.

The inventors are interested in future collaborations to increase the technological maturity of the invention and expand innovative drugs opportunities, considering licensing or transferring the patented invention to interested companies.

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