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EFFECTIVENESS OF AMPK ACTIVATING DRUGS ON TUMOR SUPPRESSION: A SYSTEMATIC REVIEW

Victor Domingos Lisita Rosa¹, Adnan Nasser Daghashtanli¹, Armani Gontijo Plácido Di Araujo¹, Ana Vitoria Cordeiro Rocha¹, Thiago Martins de Abreu¹, Jade de Oliveira Silva¹, Rafael Ribeiro Alves¹

¹Hospital das Clínicas, Universidade Federal de Goiás – Goiânia (GO), Brazil.

Objective: Some studies demonstrated that metformin increases the efficiency of systemic therapy in cancer patients. It is postulated that the increase in AMPK is one of the different mechanisms which involves tumor suppression. The purpose of this study is to evaluate the effect of AMPK activating drugs on tumor suppression. **Methodology:** This is a systematic review to assess the effectiveness of metformin in tumor suppression. A database search was conducted on PubMed and Cochrane for studies that used metformin to suppress the tumor, comparing users versus non-users in patients with solid tumors. The key words used were “AMPK,” “tumor,” and “prognosis.” Only randomized controlled clinical trials were included in the selection. **Results:** Six trials were included in this literature review. The evidence is robust in relation to tumor reduction in patients who used metformin (either diabetic or not). Saif et al. in a phase I study suggested that metformin can be administered safely with chemotherapy and an increase in AMPK phosphorylation. Dowling et al. proposed that metformin users have changes in phosphorylated AMP-activated protein kinase with beneficial anticancer effects. Klubo-Gwiedzinska et al. showed that tumor size is smaller in patients who were treated with metformin, suggesting the inhibition of tumor growth by the drug. Rodriguez et al. strongly suggested that the addition of metformin has a significant effect in progression-free survival and overall survival of patients with lung cancer. **Conclusion:** This systematic review showed that metformin therapy has a significant effect in tumor suppression.

Keywords: Breast Cancer; AMPK; Tumor Suppression.