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Invited review

Diabetes and cancer: pathophysiological fundamentals of a ‘dangerous affair’

Angelo Cignarelli, Valentina Annamaria Genchi, Irene Caruso, Annalisa Natalicchio, Sebastio Perrini, Luigi Laviola, Francesco Giorgino

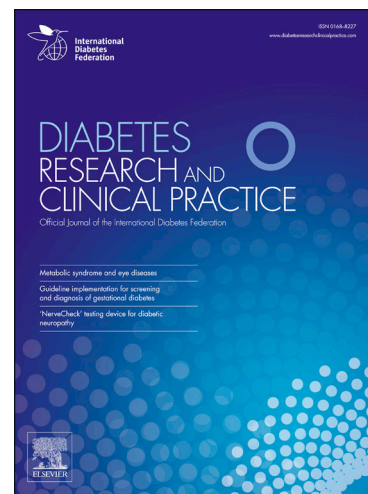
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# Diabetes and cancer: pathophysiological fundamentals of a ‘dangerous affair’

Angelo Cignarelli<sup>a</sup>, Valentina Annamaria Genchi<sup>a</sup>, Irene Caruso<sup>a</sup>, Annalisa Natalicchio<sup>a</sup>,  
Sebastio Perrini<sup>a</sup>, Luigi Laviola<sup>a</sup>, and Francesco Giorgino<sup>a,\*</sup>

<sup>a</sup>*Department of Emergency and Organ Transplantation Section of Internal Medicine, Endocrinology, Andrology and Metabolic Diseases, University of Bari Aldo Moro, Bari, Italy*

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## Abstract

Diabetes and cancer are worldwide chronic diseases with a major impact on the quality and expectancy of life. Metabolic abnormalities observed during the onset and progression of diabetes may have a critical role on the initiation and progression of carcinogenesis. To date, there are no conclusive data on the mechanisms underlying the relationship between diabetes and any type of human cancer. However, recent evidence suggests that both hyperglycemia and hyperinsulinemia in diabetes could elicit cell damage responses, such as glucotoxicity, lipotoxicity and oxidative stress, which participate in the cell transformation process raising the risk of cancer development. In addition, clinical trials have revealed that several anti-diabetes therapies may potentially affect the risk of cancer though largely undefined mechanisms. In this review, we highlight epidemiological and pathophysiological aspects of diabetes, which may influence cancer initiation and progression.

**Keywords:** diabetes, cancer, insulin, metformin, thiazolidinediones, sulphonylureas, GLP-1 receptor agonists, DPP-4 inhibitors, SGLT-2 inhibitors

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\* Corresponding author

*Email address:* francesco.giorgino@uniba.it (Francesco Giorgino)

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