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Role of WBP2 in insulin/AMPK signaling- implication in metformin anti-cancer effect

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22 March 2022, 4.30pm
Host: Dr Yang Yuansheng

Seminar Abstract

Dysregulation of insulin and AMP-activated protein kinase (AMPK) signalling pathways are responsible for many metabolic diseases such as type 2 diabetes (T2D) and cancer. In several studies, T2D was positively correlated to breast cancer incidence and mortality. Herein, we identified the role of an oncogene WW-domain binding protein 2 (WBP2) in these metabolic signalling pathways. WBP2 has an insulin resistance phenotype in C2C12 muscles cells but act as an oncogene in breast cancer cells. These observations provided evidence that WBP2 has an opposing role to metformin which is effective for T2D treatment and has anti-cancer action in various cancer. My results suggest that WBP2 inhibits metformin-induced anti-cancer effect in HER2-positive breast cancer in vitro and in vivo. Molecularly, WBP2 inhibition of metformin anti-cancer effect is through the AMPK-mTOR axis. Mechanistically, WBP2 was identified to bind Liver Kinase B1 (LKB1) and this interaction mediates the inhibition of AMPK activation by metformin.

About the Speaker

I have recently submitted my PhD thesis at NUS under the Integrative Sciences and Engineering Programme. I was attached to the Department of Biochemistry and my project focused on the role of an oncogene in molecular signaling in breast cancer. I joined the Cell line development group in BTI to explore and engage in research with translational and industrial value.

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