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Mathematical Modeling using Fractional Order Caputo Derivative of Tuberculosis and Smoking Co-dynamic Analysis and Their Impact of Lung Cancer

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3) Lung cancer
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Abstract

According to the WHO, lung cancer is currently the most common cause of cancer death worldwide [1]-[2], so it is necessary to study the risk factors associated with this type of cancer comprehensively, including tobacco smoking and tuberculosis disease [3]-[4]-[6]. This study focuses to understand the dynamics of co-infection by smoking and tuberculosis, as well as its impact on the development of cancer, using a fractional mathematical model.

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References

[1] National Library of Medicine - National Institutes of Health (MedlinePlus). \url{ https://medlineplus.gov/genetics/condition/lung-cancer/}.

[2] American Cancer Society. \url{ https://www.cancer.org/cancer/types/lung-cancer/about/key-statistics.html.}

[3] World Health Organization. \url{https://www.who.int/news-room/fact-sheets/detail/lung-cancer.}

[4] Centers for Disease Control and Prevention. \url{ https://www.cdc.gov/lung-cancer/risk-factors/}. Authors, [5] Nalbandian A, Yan BS, Pichugin A, Bronson RT, Kramnik I. Lung carcino-genesis induced by chronic tuberculosis infection: the experimental model and genetic control. Oncogene. 2009;28(17):1928–38.