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## Change in metabolomic profiles due to lung cancer progression in golden syrian hamsters: Preventative effect of curcumin

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Lung cancer (LC) is the leading cause of cancer deaths in the United States. The objectives of this study were (1) to use the metabolomic approach to investigate potential early biomarkers for LC and (2) document the effect of curcumin on change in metabolomic profiles in LC model. For this, LC was induced by *N-nitrosobis-2-(oxopropyl) amine* (BOP) in a group of Golden Syrian hamsters while the control animals were injected with saline. Both groups (BOP treated and control) were divided into two subgroups, fed either a control or a 2% curcumin supplemented diet. Urine, collected weekly was analyzed with a Varian 500 MHz nuclear magnetic resonance (NMR) spectrophotometer. Principal Component Analysis (PCA) of the Proton (1H) NMR spectral data showed significant ( $p < 0.05$ ) separation between the BOP treated and control groups. The metabolites responsible for the differences between the groups, were identified and quantified using the CHENOMX NMR metabolite database. Of the metabolites ( $n=26$ ) found to be significantly different ( $p < 0.05$ ) between the BOP treated and control groups, some, such as, glycine, sarcosine, and alanine are reported as increased in other cancer types such as prostate. These could serve as potential biomarkers of cancer in general. Others may represent possible biomarkers of LC progression, specifically. Interestingly, the metabolites found to be in higher concentration in the BOP treated group were found to be reduced in the subgroup fed curcumin, bringing the metabolomic profiles of the curcumin fed animals closer to those of the controls.

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