Basil Protects Human Lung Cells from K. pneumoniae by Increasing Their Viability

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Basil is used as a homemade remedy for many illnesses in India. I was interested in its scientific basis. Previously, I found that basil inhibited E. coli colony formation on agar plates. Here, I studied if basil can protect human cells from serious bacterial illnesses such as pneumonia. Human lung epithelial cells were incubated with different doses of basil in a 37 degrees C incubator for 24 hours. Extracts of Holy basil powder and fresh Thai basil as well as Holy basil juice were tested. Klebsiella pneumoniae (500 CFU) was added to the cells and incubated for another 24 hours, keeping one control without bacteria or basil and one with only bacteria. Cell viability was measured using Trypan Blue exclusion test. Results showed that bacteria killed more than 50% of cells, but basil suppressed it. At highest basil concentration, cell viability was comparable to that of untreated control (>90%). To understand if this is due to its antimicrobial properties, basil or saline (control) was added to blood agar plates swabbed with K. pneumoniae. The number of bacterial colonies after 24 hours was significantly less in the basil treated plates, when compared to control. The colonies were also localized away from the area where basil was added. While all three forms of basil were found to be equally effective in the antimicrobial action, holy basil juice was less effective in the inhibition of cell death. Thus, it can be concluded that basil can be used as an effective alternative method, in preventing pneumonia.

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