Abstract

For the first time we have reported repositioning of cancer drugs as potential anti-biofilm agents in *C. albicans*. Nine categories of drugs with different chemical modes of action, effectively inhibited biofilms at a concentration range of 0.5 to 4 mg/ml establishing their potential for the inhibition of biofilms. Human genes targeted by these drugs show significant identity with their homologous genes in *C. albicans* at the amino acid as well as nucleotide levels. We have evaluated the anti-Candida activity of doxorubicin and phytochemicals alone and combination, against planktonic growth and biofilms. The present work was aimed at studying the interaction of ten phytochemicals in combination with Doxorubicin against the *C. albicans*. The fractional inhibitory concentration indices ranging from 0.069 to 0.265 indicated the synergistic activity of Doxorubicin and phytochemicals against the biofilm formation. The synergy between Doxorubicin and phytochemicals offers a potential therapeutic strategy against growth and biofilm associated *Candida* infections.

A concentration-dependent anti *Candida* activity of doxorubicin in combination with five antioxidants i.e. Curcumin, Ascorbic acid, Gallic acid, Vitamin E and Quercetin were analysed using XTT-metabolic assay. A combination of 0.062 mg/ml of Doxorubicin and 0.5 mg/ml of Ascorbic acid prevented biofilm formation. The FICI ranging from 0.5 to 0.375 mg/ml indicated the synergistic activity of Doxorubicin and antioxidants against the planktonic growth and biofilm formation. Doxorubicin and antioxidant combinations could be an effective strategy against planktonic growth and biofilm forms of against candidiasis.