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## Antimutagenic, Antirecombinogenic, and Antitumor Effect of Amygdalin in a Yeast Cell-Based Test and Mammalian Cell Lines

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### Abstract

Amygdalin is a major component of the seeds of Rosaceae family of plants such as apricots, peaches, cherry, nectarines, apples, plums, and so on, as well as almonds. It is used in alternative medicine for cancer prevention, alleviation of fever, cough suppression, and quenching thirst. The aim of the present study is to determine the mutagenic and recombinogenic effects of amygdalin in a test system *Saccharomyces cerevisiae* and to evaluate its potential antitumor effect in a yeast cell-based test and colon cancer cell lines. Results obtained show that concentrations 25, 50, and 100 µg/mL did not have any cytotoxic, mutagenic, and carcinogenic effect in yeast cell-based tests. Pretreatment with amygdalin at concentration 100 µg/mL leads to around twofold of the cell survival and decrease of reverse mutation frequency, induced by the alkylating agent methyl methanesulfonate. The frequency of gene conversion and mitotic crossing-over is around threefold lower. The anticarcinogenic potential of amygdalin at the same concentration is presented as around fourfold reduction of Ty1 retrotransposition induced by hexavalent chromium. In summary, data presented in this study provide evidence concerning the inability of amygdalin itself to provoke events related to the initial steps of tumorigenesis. In addition, the observed antimutagenic/antirecombinogenic effect could be activation of error-free and error-prone recombination events. Based on the high selectivity toward normal or tumor cell lines, it could be speculated that amygdalin has higher cytotoxic effect in cell lines with higher proliferative and metabolic activity, which are the majority of fast developing tumors.

**Keywords:** MMS; *Saccharomyces cerevisiae*; amygdalin; chromium; colon cancer cells.

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