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PREVENTION

DAILY ASPIRIN AND CHEMOPREVENTION

The regular use of aspirin has been associated with a reduced risk of cancer, particularly of the gastrointestinal tract. Two recent studies have consolidated the role of aspirin as a chemopreventive drug.

In the first study, Trabert and colleagues evaluated the effect of the use of aspirin, nonaspirin NSAIDs and acetaminophen on ovarian cancer by pooling data from 12 population-based case-control studies. Trabert explains that "women who reported daily aspirin use had a 20% lower risk of ovarian cancer compared with women who did not take aspirin regularly." This effect was most prominent among women receiving a low-dose aspirin regimen, similar to the one used for cardiovascular protection. As Trabert reinforces, "future studies are needed to evaluate the benefits and harms of taking aspirin for ovarian cancer prevention," and to justify the use of low-dose aspirin as chemoprevention treatment in the average-risk population.

In the second study, Kromer and colleagues unveiled the mechanism of aspirin chemoprevention. Kromer explains that for many years "the hypothesis that tetraploidization may constitute one of the first steps of the oncogenic transformation," has been investigated. The researchers carried out phenotypic screening to identify compounds that would kill tetraploid cells, and spare their normal diploid precursors. "Surprisingly, out of 500 bioactive compounds, the only agent that was selectively cytotoxic for tetraploid cells was resveratrol," emphasizes Kromer.

They found that resveratrol killed tetraploid cells through the activation of the AMP-activated protein kinase (AMPK) and that other AMPK activating drugs, such as aspirin, have a similar antitetraploid effect. Moreover, oral treatment with either resveratrol or aspirin prevented the accumulation of tetraploid cells in the intestine of mice genetically prone to develop intestinal carcinomas. According to Kromer "these results support the hypothesis that the protective action of resveratrol and aspirin is mediated by cytotoxic effects on tetraploid cancer cell precursors," and highlight the relationship between tetraploidy and oncogenesis.

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Original articles Lissa, D. Resveratrol and aspirin eliminate tetraploid cells for anticancer chemoprevention. *Proc. Natl Acad. Sci. USA* doi:10.1073/pnas.1318440111 | Trabert, B. Aspirin, nonaspirin nonsteroidal anti-inflammatory drug, and acetaminophen use and risk of invasive epithelial ovarian cancer: a pooled analysis in the ovarian cancer association consortium. *J. Natl Cancer Inst.* doi:10.1093/jnci/djt431