RE: Serum Phospholipid Fatty Acids and Prostate Cancer Risk in the SELECT Trial

In July 2013, Brasky and colleagues published a study that positively associated serum phospholipid omega-3 polyunsaturated fatty acids (PUFAs) with prostate cancer risk (1). We would like to raise some of our concerns about this study.

Many clinical studies have demonstrated cancer suppressive effects of omega-3 PUFA consumption (2–4). These studies are well supported by other preclinical studies of animal and cell culture models that use defined and controlled dietary fatty acid interventions (5–7). Nevertheless, there are inconsistencies in the literature, some of which may be due to methodological differences.

Brasky et al. measured phospholipid fatty acids in serum from patients in the SELECT trial. Serum phospholipid represents only one source of fatty acid present in the blood and excludes other sources such as triacylglycerol fatty acids, free fatty acids, and cell membrane fatty acids. It is unclear whether this measurement truly reflects the dietary consumption of PUFAs. In fact, their data show that each experimental group had an approximately 6:1 ratio of omega-6 fatty acid to omega-3 fatty acid. This low ratio is inconsistent with reports from the literature showing ratios typically greater than 20:1 in Western populations (8). Additionally, because the SELECT trial was designed for the study of selenium and vitamin E in prostate cancer patients, it may not be optimized for fatty acid analysis. Serum fatty acids are heavily influenced by feeding/fasting cycles and may vary substantially between subjects based on their most recently consumed meal. Therefore, a well-designed blood sampling protocol is critical.

In disagreement with the study's conclusions, we would like to present an alternative possibility for the observed increase in phospholipid omega-3 fatty acids of prostate cancer patients. Fatty acids from phospholipids are subject to enzymatic cleavage by specific phospholipase enzymes. Upon their release, omega-3 PUFAs serve as precursors for a variety of proresolving and anti-inflammatory signalling mediators, such as resolvins, protectins, and maresins (9,10). The increased presence of omega-3 PUFAs in the phospholipid fraction suggests a low bioavailability of resolvins and protectins, and thus, this may increase inflammation, thereby promoting cancer development and progression. In this scenario, consumption of omega-3 PUFAs will be beneficial for prostate cancer patients.

In summary, we have concerns about the experimental design of the study published by Brasky and colleagues (1). We disagree with some of the authors' conclusions, and we urge readers to interpret the data with caution.

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Notes

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DOI:10.1093/jnci/dju023
First published online March 31, 2014