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N-3 long-chain polyunsaturated fatty acid status and breast cancer risk

Breast cancer is the most common type of cancer diagnosed in Canadian women - 1 in 9 Canadian women will be diagnosed in their lifetime. Despite ongoing advances in screening, prevention, diagnosis, and treatment; breast cancer remains the second-leading cause of cancer-related death. Animal studies and laboratory studies using human breast tumours suggest that the omega-3 polyunsaturated fatty acids, found mostly in fish, can reduce the risk of developing breast cancer. Measuring blood levels of the different omega-3 fatty acids is a more precise way to determine intake and status. We propose to look at participants from Alberta's Tomorrow Project (ATP) as well as BC Generations Project (BCGP) who provided data and blood samples in order to look at dietary intake of omega-3 fatty acids as well as the levels of these fatty acids in blood. We will use dietary intake information from ~16,000 women in ATP as well as a blood sample donated by ~1000 women in ATP and BCGP (one third who have been diagnosed with breast cancer) to measure blood omega-3 fatty acid levels and also to determine if there is an association with breast cancer risk. To do this, we will account for other risk factors for breast cancer, such as family history and physical activity, to tease out the specific risk that might be associated with a low status of omega-3 fatty acids. This work will provide evidence as to whether omega-3 fatty acids reduce the risk of breast cancer, and will provide some reference levels for counselling women on how to reduce their risk.