Vitamin D is one of the four fat soluble vitamins that has many important biological functions. It is formed when the skin is exposed to sunlight, that cause the photolysis of 7-dehydrocholesterol to previtamin D. Previtamin D undergoes two sequential hydroxylation reactions, first in the liver to form 25-hydroxyvitamin D (25-OH-D), second in the kidney to form 1,25-dihydroxyvitamin D [$1,25(OH)_2D$] (Michael, 1999). The major natural source of vitamin D is exposure to sun light (Holick, 2006). Fortified food, oil from liver tuna and code (Michael, 1999) and Multivitamins that contain vitamin D are other sources of vitamin D (Michael and Tai, 2008).

Vitamin D act as a hormone that regulate the concentration of calcium and phosphate in the bloodstream. promoting the healthy mineralization, growth and remodeling of bone (Underwood and DeLuca,1984). Vitamin D also modulates neuromuscular function, reduces inflammation, and act as anticancer agent by influencing the action of many genes that regulate the proliferation, differentiation and apoptosis of cells.

The vitamin D3 receptor (VDR) is an intracellular hormone receptor that specifically binds to the active form of vitamin D (1,25-dihydroxyvitamin D3 or calcitriol) and interacts with target-cell nuclei to produce a variety of biologic effects (Baker *et al.*, 1988). There are many natural allelic variants of the human VDR gene (Morrison *et al*, 1994) (Koshiyama *et al*,1995) with significant differences between ethnic groups and races (Uitterlinden *et al*, 2004). The VDR gene variants expression associates with many diseases including cancer (Uitterlinden *et al*, 2004) and risk of cancer occurrence and prognosis. VDR is expressed in normal mammary tissue, and more than 80% of breast tumor specimens are VDR positive (Colston *et al*, 1989).

Common allelic variants identified in human VDR gene have been extensively studied with respect to risk for breast cancer (Zmuda *et al*, 200). The best-studied VDR polymorphisms include a start codon polymorphism *FokI* in exon II. The *Fok1* is a T\C transition polymorphism (ATG to ACG) at the first of two potential translation initiation sites in exon II (Baker *et al.*, 1988). Individuals with the C allele initiate translation at the second ATG site and lack the three amino acids of the full-length VDR protein (Arai *et al*,1997). The second polymorphism is *Bsm1* polymorphism in the entron area between exon 8 and 9 (Whitfield *et al*,2001). It is Adenine/Guanine (A\G) polymorphism. It has also transition form known as Cytosine/Thymine(C\T) (Wendy *et al*, 2003).

These polymorphisms have been analysed for potential associations with breast cancer. Since they are located at each end of the gene encoding VDR, which are less likely to be in linkage disequilibrium (LD) and are therefore good candidates for independent effects on invasive breast cancer risk (Uitterlinden *et al*, 2004).

Most of the studies have been conducted among western population, while there is a lack of information regarding VDR polymorphism and its association with breast cancer in Saudi population.

This is a retrospective control cohort study aiming to assess more information on the association of the two VDR gene polymorphisms *FokI* and *BsmI* with the breast cancer in some Saudi women.

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