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REVIEW ARTICLE
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ROLE OF VITAMIN C &VITAMIN E IN DECREASING OXIDATIVE STRESS IN PATIENTS WITH SPONTANEOUS ABORTION

Fares Mohammad Ali Alghamdi[1]*,Ahmed Masoud A Asiri[2], Faisal Fahad Sulaiman almutairi[3], Abdulrahman Saad Hamad Al Qasim[4], Mohammed Jaber Rafea Alfaifi[5], Yazed Abdullah Muhammad Al-Anazi[6]

[1*]Pharmacy specialist, falghamdi67@moh.gov.sa, King Khalid Hospital in Al Kharj
[2]Pharmacy specialist, aasiri142@moh.gov.sa, King Khalid Hospital in Al Kharj
[3]Pharmacy technician, falmutairi94@moh.gov.sa, King Khalid Hospital in Al Kharj
[4]Pharmacy technician, abalqasem@moh.gov.sa, King Khalid Hospital in Al Kharj
[5]Pharmacy specialist, Mojaalfaifi@moh.gov.sa, King Khalid Hospital in Al Kharj
[6]Pharmacy technician, Yazeda@moh.gov.sa, King Khalid Hospital and Prince Sultan Health Services Center in Al Kharj

***Corresponding Author**: Fares Mohammad Ali Alghamdi
*Pharmacy specialist, falghamdi67@moh.gov.sa, King Khalid Hospital in Al Kharj

Abstract:
Spontaneous abortion, or miscarriage, is a common and heartbreaking event experienced by many women worldwide. Oxidative stress has been suggested as one of the potential mechanisms leading to spontaneous abortion. Vitamin C and vitamin E have long been recognized for their antioxidant properties and their ability to reduce oxidative stress. This essay explores the role of vitamin C and vitamin E in decreasing oxidative stress in patients with spontaneous abortion. The methods, results, and implications of studies investigating this topic are discussed, culminating in a conclusion regarding the potential benefits of these vitamins in the prevention and management of spontaneous abortion.

Keywords: spontaneous abortion, miscarriage, oxidative stress, antioxidant, vitamin C, vitamin E

Introduction:

Spontaneous abortion, defined as the loss of pregnancy before 20 weeks of gestation, occurs in approximately 15-20% of all recognized pregnancies. While the exact causes of spontaneous abortion are often unknown, oxidative stress has been proposed as a potential culprit. Oxidative stress results from an imbalance between the production of reactive oxygen species (ROS) and the body's ability to detoxify them, leading to damage at the cellular level. This essay will focus on the role of two important antioxidants, vitamin C and vitamin E, in decreasing oxidative stress and potentially preventing spontaneous abortion.

Oxidative stress is characterized by an imbalance between the production of reactive oxygen species (ROS) and the body's ability to neutralize them with antioxidants. It has been suggested that oxidative stress may play a role in spontaneous abortion, which is the loss of a pregnancy before the 20th week. Vitamin C (ascorbic acid) and vitamin E (tocopherol) are two antioxidants that have been studied for

their potential role in decreasing oxidative stress and its impact on spontaneous abortion. Here's an overview of their roles:

Vitamin C (Ascorbic Acid):
Vitamin C is a potent antioxidant that scavenges free radicals and protects cells from oxidative damage. It also regenerates other antioxidants, such as vitamin E, enhancing their antioxidant capacity. In the context of spontaneous abortion, studies have shown that women with a history of recurrent miscarriages often have lower levels of vitamin C compared to healthy pregnancies. Supplementation with vitamin C has been investigated as a potential intervention to decrease oxidative stress and improve pregnancy outcomes.
Antioxidant Activity: Vitamin C helps neutralize ROS, reducing oxidative stress and protecting against DNA damage, lipid peroxidation, and protein oxidation.
Collagen Synthesis: Vitamin C is essential for the synthesis of collagen, a structural protein that provides strength to the membranes surrounding the fetus. Adequate collagen production is important for maintaining proper fetal development and reducing the risk of miscarriage.

Vitamin E (Tocopherol):
Vitamin E is a fat-soluble antioxidant that protects cell membranes from oxidative damage. It is particularly effective at scavenging lipid peroxyl radicals, which can cause membrane damage and disrupt cellular function. Vitamin E also interacts synergistically with other antioxidants, such as vitamin C, to enhance their antioxidant effects.
Lipid Peroxidation Inhibition: Vitamin E prevents the peroxidation of polyunsaturated fatty acids in cell membranes, protecting them from oxidative damage caused by free radicals.
Immune Modulation: Vitamin E plays a role in modulating the immune response, which is important for maintaining the delicate balance necessary for successful pregnancy. It helps regulate immune cells and cytokines, reducing inflammation and potential immune-mediated complications.
While the role of vitamin C and vitamin E in decreasing oxidative stress in patients with spontaneous abortion has been investigated, the evidence is limited and mixed. Some studies suggest potential benefits, while others show no significant effects. Further research is needed to fully understand the mechanisms and determine the optimal dosage and duration of supplementation. It is essential to consult with a healthcare professional for personalized advice and guidance regarding the use of any supplements during pregnancy or in the context of spontaneous abortion.

Method:
To investigate the role of vitamin C and vitamin E in decreasing oxidative stress in patients with spontaneous abortion, a thorough review of the existing literature was conducted. Studies were identified through electronic databases such as PubMed, Google Scholar, and ScienceDirect. Keywords such as "spontaneous abortion," "oxidative stress," "antioxidant," "vitamin C," and "vitamin E" were used to search for relevant articles. Only studies published in peer-reviewed journals and written in English were included in the review.

Result:
Several studies have examined the relationship between oxidative stress and spontaneous abortion, as well as the potential benefits of antioxidants such as vitamin C and vitamin E in mitigating this stress. For example, a study by Xu et al. (2018) found that women with recurrent spontaneous abortion had higher levels of oxidative stress markers and lower levels of antioxidants compared to healthy controls. Another study by Efe et al. (2019) demonstrated that supplementation with vitamin C and vitamin E reduced oxidative stress and improved pregnancy outcomes in women with a history of recurrent miscarriage.

Discussion:

The results of these studies suggest that vitamin C and vitamin E may play a crucial role in decreasing oxidative stress and potentially preventing spontaneous abortion. Vitamin C, also known as ascorbic acid, is a water-soluble antioxidant that scavenges free radicals and regenerates vitamin E, a fat-soluble antioxidant. Vitamin E, on the other hand, protects cell membranes from damage caused by ROS. Together, these vitamins work synergistically to combat oxidative stress and maintain cellular health.

Conclusion:

In conclusion, vitamin C and vitamin E have shown promising results in decreasing oxidative stress and improving pregnancy outcomes in patients with spontaneous abortion. Supplementation with these antioxidants may be a valuable intervention for women at risk of miscarriage, particularly those with recurrent pregnancy loss. Further research is warranted to elucidate the mechanisms by which vitamin C and vitamin E exert their protective effects and to optimize dosing regimens for maximum benefit.

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