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REPUBLIC OF TURKEY

MARMARA UNIVERSITY

INSTITUTE OF HEALTH SCIENCES

**THESIS TITLE (14 FONT SIZE, TIMES NEW ROMAN, BOLD, CAPITAL LETTER, maximum 20 words)**

STUDENT’S NAME AND SURNAME

(CAPITAL LETTER, 12 FONT SIZE, TIMES NEW ROMAN)

MASTER OF SCIENCE/PHILOSOPHY OF DOCTORATE THESIS

(CAPITAL LETTER, 12 FONT SIZE, TIMES NEW ROMAN)

NAME OF THE DEPARTMENT

(CAPITAL LETTER, 12 FONT SIZE, TIMES NEW ROMAN)

SUPERVISOR

TITLE OF THE MENTOR, MENTOR’S NAME AND SURNAME

(CAPITAL LETTERS,12 FONT SIZE, TIMES NEW ROMAN)

ISTANBUL-YEAR OF THE THESIS

(12 FONT SIZE, TIMES NEW ROMAN)

(Left: 4 cm, Right: 2.5 cm, Upper: 3 cm, Bottom: 3 cm)

# STATEMENT

Hereby I declare that this thesis study is my own work, I had no unethical behavior in any stage from planning of the thesis until writing it, I have obtained all the information in this thesis within the academic and ethical rules, I have cited all the information and comments that are not obtained with this thesis study, and these sources are also included in the list of references, I hereby declare that I have no infringement of patents and copyrights during the study and writing of this thesis.

Name and Surname of the Student

Signature

**CURRICULUM VITAE**

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| --- | --- | --- | --- |
| **Name** |  | **Surname** |  |
| **Place of Birth** |  | **Date of Birth** |  |
| **Nationality** |  | **Tel** |  |
| **E-mail** |  |  |  |

**Educational Level**

|  |  |  |
| --- | --- | --- |
|  | **Name of the Institution where he/she was graduated** | **Graduation year** |
| **Postgraduate/Specialization** |  |  |
| **Masters** |  |  |
| **Undergraduate** |  |  |
| **High school** |  |  |

**Job Experience**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Duty** | **Institution** | **Duration (Year - Year)** |
| **1** |  |  |  |
| **2** |  |  |  |
| **3** |  |  |  |

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| **Foreign Languages** | **Reading comprehension** | **Speaking\*** | **Writing\*** |
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| **Foreign Language Examination Grade#** | | | | | | | | |
| YDS | ÜDS | IELTS | TOEFL IBT | TOEFL PBT | TOEFL CBT | FCE | CAE | CPE |
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|  | **Math** | **Equally weighted** | **Non-math** |
| **ALES Grade** |  |  |  |
| **(Other) Grade** |  |  |  |

**Computer Knowledge**

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| **Program** | **Use proficiency** |
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**\***Evaluate as very good, good, moderate, poor.

**TURKISH SUMMARY EXAMPLE :**

**Protein s’nin serviks kanseri hücreleri üzerine etkisinin araştirilmasi**

Öğrenci Adı: Xxxxx YYYYY

Danışman Adı: Prof. Dr. Vvvvv ZZZZZZZ

**1. ÖZET**

**Amaç:** Protein S koagülasyon sisteminin en önemli proteinlerinden biridir. Yapılan çalışmalarda Protein S’nin antikoagülan etkisinin yanında sitotoksik, antiproliferatif, antimikrobiyal ve apoptotik ekilerinin de olduğu gösterilmiştir. Serviks kanseri, kadınlarda görülen kanserden ölümlerin ikinci sırasında yer almaktadır. U tezde Protein S’nin insan serviks kanseri hücreleri (HeLa) üzerindeki olası etkilerinin belirlenmesi amaçlanmıştır.

**Gereç ve yöntem:** Protein S’nin farklı konsantrasyonları kullanılarak antiproliferatif etkileri MTS yöntemiyle araştırıldı. HeLa hücreleri üzerindeki antikanserojenik etki mekanizmasını belirlemek için kaspaz enzim aktivasyonlarıyla mitokondri membran potansiyelinin ölçüm işlemleri de gerçekleştirildi.

**Bulgular:** Protein S’nin HeLa hücreleri üzerinde antikanserojenik etkisi olduğu, normal hücreler üzerinde ise sitotoksik etkisi olmadığı belirlendi. Protein S’nin antikanserojenik etkisini kaspaz enzim aktivasyonunu arttırarak ve mitokondri membran potansiyelini azaltarak meydana getirdiği ortaya konuldu.

**Sonuç:** Bu çalışma Protein S’nin insan serviks hücreleri üzerinde antiproliferatif etkilerini ortaya koyan ilk çalışmadır. Çalışmadan elde edilen bulgular ışığında, Protein S’nin serviks kanseri için potansiyel bir terapötik olabileceğini düşünüyoruz.

**Anahtar kelimeler:** Protein S, apoptoz, serviks kanseri, sistotoksisite

**ENGLISH SUMMARY EXAMPLE :**

**Investigation of the effect of protein s on cervical cancer cells**

Student Name: Xxxxx YYYYY

Name of Advisor: Prof. Dr. Vvvvv ZZZZZZZ

**2. SUMMARY**

**Objective:** Protein S is one of the most important proteins of the coagulation system. In addition to the anticoagulant effect of protein S, cytotoxic, antiproliferative, antimicrobial and apoptotic cultivars have been shown to be present. Cervical cancer is the second most common cause of cancer death in women. In this thesis, it is aimed to determine the possible effects of Protein S on human cervical cancer cells (HeLa).

**Material and methods:** Antiproliferative effects of protein S using different concentrations were investigated by MTS method. In order to determine the mechanism of anticarcinogenic effect on HeLa cells, measurements of caspase enzyme activations and mitochondrial membrane potential were performed.

**Results:** Protein S was found to have an anticarcinogenic effect on HeLa cells and no cytotoxic effect on normal cells. It has been shown that protein S is produced by increasing the caspase enzyme activation and decreasing the mitochondrial membrane potential.

**Conclusion:** This is the first study to demonstrate the antiproliferative effects of Protein S on human cervical cells. In the light of the findings of the study, we think that Protein S may be a potential therapeutic for cervical cancer.

**Keywords:** Protein S, apoptosis, cervical cancer, cytotoxicity