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Investigation of chemoprevention properties of *Halopteris scoparia* brown algae by using *in vivo* bioluminescent imaging

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Cancer disease causing uncontrolled cell division is one of the crucial research areas. Cancer types such as lung, prostate, stomach, colon, and over are most common. Chemoprevention as the use of natural or synthetic chemicals to prevent from cancer disease has been investigated by several groups in the literature. There are a lot of scientific discovery about natural product agents such as vegetables, fruits, mushrooms, yeast, fungi, algae for potential new anticancer drugs. Algae survive in a large scale in the earth: in the sea, rivers, and lakes, on the land, on the other organism. Some bioactive compounds obtained from seaweeds have the ability to inhibit the growth of different cancer cells. They can be employed as cancer chemopreventive and/or chemotherapeutic agents. In this study, *in vivo* anticancer effects of *Halopteris scoparia* Sauvageau (brown algae) as an anti-cancer drug has been evaluated against A549 human lung cancer cells. *H.scoparia* was collected at a depth of 1-2 m, from the coastline of Urla, Izmir, in April 2012. The samples were washed three times with tap water and maintained in a refrigerator at -20°C. Five-week-old male nude mice were divided into three groups: control, 900 mg/kg algae treatment (every day, p.o.) and 2 mg/kg cisplatin treatment (twice a week, i.p). A549- luciferase human lung cells (1-2 x 10⁶ cells/site) were injected subcutaneously into the left or right side of the mice legs. Anti-cancer properties of *H. scoparia* algae were examined by using bioluminescence imaging (IVIS spectrum) during four weeks with tumor volume and animal weight measurements. *In vivo* bioluminescence imaging uses luciferase enzymes as reporters to generate light emission during the catalytic oxidation of their substrates for noninvasive imaging of biological targets and processes in living animals. Consequently, the results show that anti-cancer activity of *H. scoparia* is similar to cisplatin which is used commonly chemotropic agent.

Biography

Özgenur Erdokur was born in Bursa on 2 Nisan 1993. She studied at Ege University, Faculty of Science, Department of Chemistry between 2011 to 2016. She has participated in various congresses such as participating the organizing committee of the 6th National Chemistry Students Congress and the *in vivo* cancer imaging course which organized in 2015 in Ege University, Center for Drug Research & Development and Pharmacokinetic Applications (ARGEFAR). She has started her postgraduation since 2016 in Ege University, Division of Physical Chemistry and also worked in ARGEFAR. a charge of the *In Vivo* Imaging System (IVIS) device with my supervisor Assoc.Prof.Dr.Yeliz Yıldırım who is consultant of device which is located in Prephase research unit of ARGEFAR. IVIS has many uses, and their laboratory has a wide range of applications. There are a lot of project continue in their laboratory especially cancer disease, so she has worked on these issues many times. The Prephase imaging and bio-similarity researches are of great importance for the drug development process.

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