

# Potential of Green Chili Extract (*Capsicum annuum*) on myeloma cells death

*by* Rochmah Kurnijasanti

---

**Submission date:** 30-Jan-2020 04:23PM (UTC+0800)

**Submission ID:** 1248661664

**File name:** Potential\_of\_Green\_Chili....pdf (1.08M)

**Word count:** 1061

**Character count:** 5719

## Potential of Green Chili Extract (*Capsicum annuum*) on myeloma cells death

Rochmah Kurnijasanti<sup>1,a)\*</sup>, Alifvia Izza Putri Edward<sup>2(b)</sup>, Yonas Kristijanto<sup>3</sup>,  
Doohan Mahendra<sup>4</sup>, and Nadya Ivanora Hermanda<sup>5</sup>

<sup>1,2,3,4,5</sup>Department of Basic Medicine Veterinary, Veterinary Faculty, Airlangga  
University<sup>a)</sup> Corresponding author:  
santisam19@yahoo.co.id  
<sup>b)</sup> vyalif.putri@gmail.com

### Abstract

The purpose of the study was to determine the potential of the ethanol extract of green chili (*Capsicum annuum*) against the proliferation of myeloma cells. The study used ethanol extract of green chili (*Capsicum annuum*) by maceration. The Myeloma cell concentration was  $1.10^{-5}$  ml<sup>-1</sup> of medium DMEM and 10% FBS. The treatment of Myeloma cells were divided into 8 treatments with 5 repetitions. The treatment group was treated with the extract of green chili concentration of 1%, 2%, 4%, 8%, 16%, 32%, and 64% by administration of 0.1 ml each microplate, while the control group was treated without the extract of green chili but using aqua pro injection of a placebo substance. Once it is stored into a cooler with CO<sub>2</sub> because myeloma cells require CO<sub>2</sub> to live, and its growth was observed for 3 days. Observations were made in three days post treatment using microscope by observing myeloma living cells, lysis, and dead cells after the addition of extracts of green chili. Data were analyzed descriptively. The results showed that green chili extract concentration could inhibit proliferation of myeloma cells. In the treatment granting extract of green chili of 64% concentration caused 100% myeloma cells die.

**Keywords:** Extract, Green chili, *Capsicum annuum*, Proliferation, Myeloma cells death.

## 1. INTRODUCTION

Cancer is an abnormal cycle of the cell disease that result uncontrollable cell growth (abnormal cell division) that attack surrounding tissue and migrate to other body tissues via the blood vessel and lymphatic system (cells metastases) (NCI, 2011). Cancer is one of the leading causes of death worldwide. In 2012, about 8.2 million deaths caused by cancer. More than 60% of new cases and approximately 70% of cancer deaths in the world each year occur in Africa, Asia and Central and South America. It is estimated that the annual cancer cases will increase from 14 million in 2012 to 22 million in the next two decades (Jemal *et al.*, 2005). Nationally, the prevalence of cancer in the population of all ages in Indonesia in 2013 was 1.4 % or estimated around 347 to 792 people. Treatment for cancer is quite expensive, especially for developing countries like Indonesia with most cases of cancer patients. From the economic side, the state expenditures for cancer are the second highest after expenditures for haemodialysis. State expenditures for cancer in 2012 reached 144.7 billion (Riset Kesehatan Dasar, 2013).

Conventional treatment of common disease among cancer with surgery, chemotherapy and radiotherapy (Apantaku, 2002). Therapeutic cancer surgery cannot be done, especially in the case that cancer cells have spread (metastases). Although chemotherapy can kill cancer cells, chemotherapy and radiation can cause side effects (Ixora,

2007). The treatment of cancer is still developed to reduce the side effects of treatment. Many studies conducted to obtain an anti-cancer active ingredient with less side effects and affordable (Sukmarianti, 2013). The use of herbs developed for cancer therapy is possible because the effect is smaller, especially in Indonesia. Indonesia is an agricultural country. One food that is produced is chili. In general, the public only knows the use of chili for seasoning. The chili has the effect of a very spicy taste and as a food flavour enhancer. Chili contains vitamins A, B, C, D, E, and minerals, which act as antioxidants. The highest antioxidant content is in green chili. In addition to antioxidants, chili also contains *L-asparaginase* and *Capsaicin*. *L-asparaginase* compounds and capsaicin in chili serves to control cancer (Kilham 2006). Based on this background, it is necessary to do research on the potential of green chilli extract.

## 2. RESEARCH METHODS

The study was an experimental laboratory research using Myeloma cancer cultures. The study was conducted at the Laboratory of Pharmacology of the Faculty of Veterinary Medicine and Laboratory Pusvetma Airlangga University Surabaya.

### Research Tools

The tools used in the study were test tube, conical tube, measuring cups, micro pipette, yellow tip, eppendorf, syringe (1 ml), glass beaker, erlenmeyer, plate 24 wells, petri dish, cover glass, objects glass, analytical balance, rotary evaporator (Buchi), vortex, centrifuges, refrigerators, Laminar Air Flow, and a microscope.

### Research Materials

Materials used in this study include: myeloma cell culture, green chili (*Capsicum annum*), absolute ethanol (96%), distilled sterile water, Fetal Bovine Serum (FBS) 10%, DMEM Medium.

### Procedure Extract

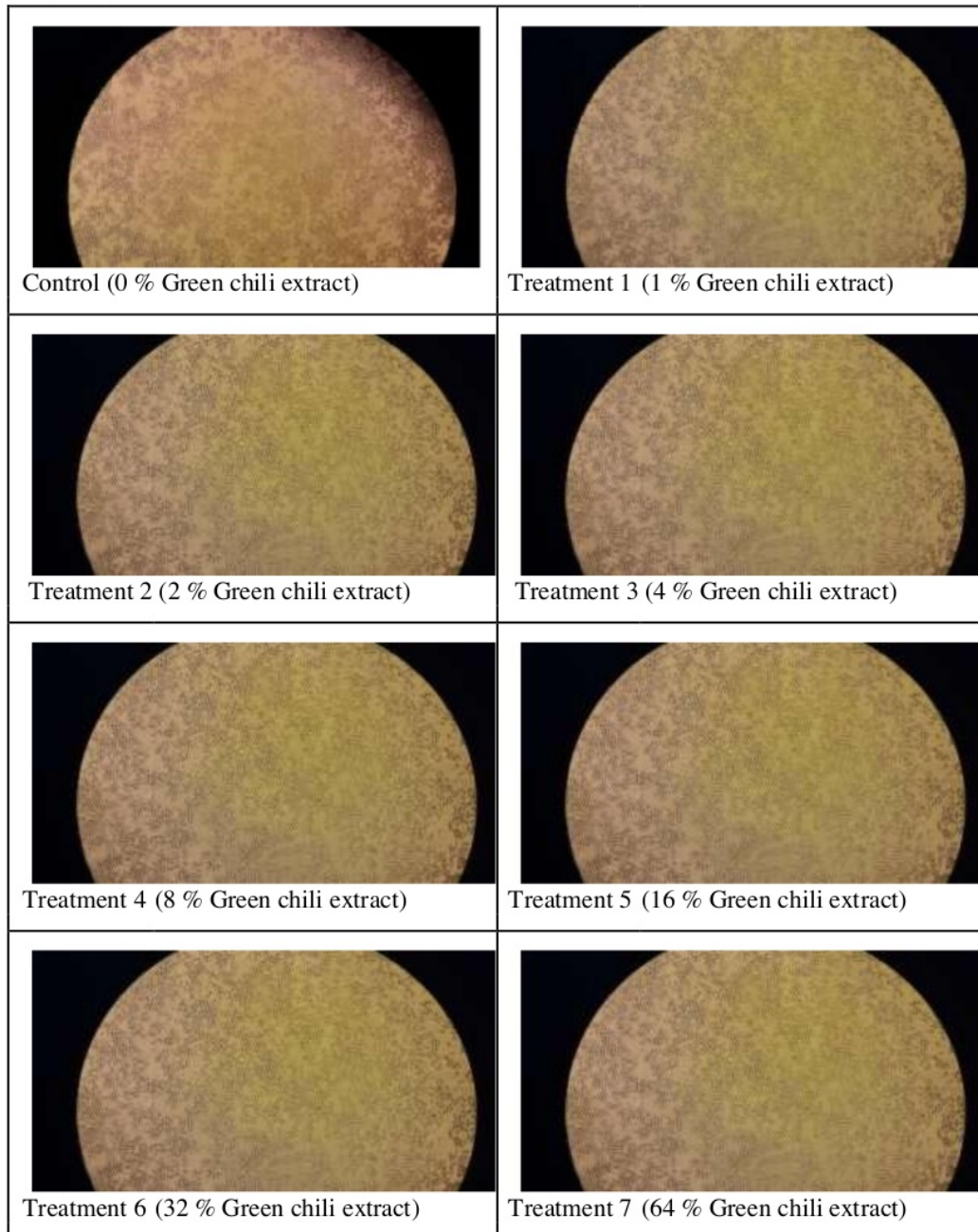
The extract of green chili was made using maceration method. First, green chili was dried in a room temperature then made into powder. Second, the powder was macerated in 96% ethanol for three days. Furthermore, the macerate was obtained by filtering and evaporating using rotary evaporator to get thick extract.

### In Vitro Anticancer test using Myeloma Cells

Myeloma cells were thawed and propagated in petri dish until the cell is ready for test. Myeloma cells  $10^5$  cells  $\text{ml}^{-1}$  in 2 ml of cell medium (DMEM and FBS 10%) were included in 24 well plate and added with test samples that have been dissolved in sterile distilled water with a concentration of respectively 0% (control), 1%, 2%, 4%, 8%, 16%, 32% and 64% of 100 mL / well. Each concentration be repeated 3 times. Furthermore it was incubated at a temperature of 37°C for 24 hours. The living cells, lysis and death was observed using microscope.

### 3. RESULT AND DISCUSSION

The result of Myeloma cell growth observation in each concentration is presented on Figure 1.



**Figure 1.** Observations myeloma cell culture with various treatments green chili Extracts (*Capsicum annuum*) using a microscope with 200x magnification.

# Potential of Green Chili Extract (*Capsicum annum*) on myeloma cells death

## ORIGINALITY REPORT

14%

SIMILARITY INDEX

11%

INTERNET SOURCES

10%

PUBLICATIONS

6%

STUDENT PAPERS

## PRIMARY SOURCES

1	Submitted to Universitas Airlangga Student Paper	3%
2	<a href="http://digitalscholarship.unlv.edu">digitalscholarship.unlv.edu</a> Internet Source	3%
3	<a href="http://www.leicaarchive.com">www.leicaarchive.com</a> Internet Source	2%
4	Giovanni Benelli, Annalisa Lo Iacono, Angelo Canale, Heinz Mehlhorn. "Mosquito vectors and the spread of cancer: an overlooked connection?", <i>Parasitology Research</i> , 2016 Publication	2%
5	Arvan Aulia Rachman, Zuherman Rustam. "Cancer classification using Fuzzy C-Means with feature selection", 2016 12th International Conference on Mathematics, Statistics, and Their Applications (ICMSA), 2016 Publication	2%
6	<a href="http://repository.its.ac.id">repository.its.ac.id</a> Internet Source	1%

---

Exclude quotes      Off

Exclude matches      Off

Exclude bibliography      On