

# Assessing the Medicinal Benefits of Antioxidants Compounds from extracted Burdock plant using Non-cellular assays

## Introduction

The foundation of medicinal chemistry is a discipline with the goal of discovering, identifying, synthesizing, and testing new pharmaceutical drugs. Different lab techniques and the use of specialized equipment are used in the lab to extract the plant in which we have selected. The plant our group has selected is *Arctium*, commonly known as Burdock. Burdock is a plant found in the old world. The plant belongs to the biological classification genus, and belongs to the plant family Asteraceae. The root, leaf, and seeds of burdock are essential in creating medicine with the extracted plant. Burdock's roots, leaves, and seeds have beneficial medicinal properties. In the current study, our group will be focusing on extracting the leaves of burdock. We will analyze the organic properties of burdock leaves and their levels of antioxidants to include treatment of diseases such as Alzheimer's, a neurological disease and illnesses such as leukemia. Burdock is also known to benefit people who suffer from joint pain, bladder infections, high blood pressure, liver disease, anemia, acne, and diabetes. Burdock also has known properties that can help kill germs, reduce fever, and purify the blood.



## Abstract

*Arctium*, commonly known as Burdock, is a plant found in Europe. The plant belongs to the biological classification genus, and belongs to the plant family Asteraceae. The root, leaf, and seeds of burdock are essential in creating medicine with the extracted plant. But in this experiment only the leaf will be used. There are several advantages for this plant. For example, one of the advantages of burdock is that it can help make the flow of urine easier especially for men and women older in age. Many other advantages of burdock include help with the killing of germs, it can also help reduce a person's fever, and purify human blood. In some cases burdock was found to treat anemia, neuralgia, and skin conditions such as acne. The main use of the burdock plant for this summer internship is to find an antioxidant replacement. However, Burdock is high in antioxidant levels—phenolic acids, quercetin, and flavones. According to previous research, Burdock exhibits neuroprotective properties against free radicals in PC12 cells. A Free radical is an unstable oxygen molecule that has the ability to do damage to human cells, human organs, or the entire human body. Burdock is most commonly used for the treatment of cough, joint pain, bladder infections, high blood pressure, liver disease and diabetes. With this known, we can come up with a plant extract with antioxidant properties that could help inhibit oxidative stress and reduce species involved in neuronal diseases such as Alzheimer's and cancer such as Leukemia.



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## Hypothesis

If we extract Burdock leaves in an Ethanol solution, a Water solution, and a fraction of 50% Ethanol and 40% Water, we will acquire antioxidant properties that can help create a drug that could have the potential to cure diseases such as Leukemia and neurological disorders like Alzheimer's disease.



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## Research Question

Does the plant *Arctium* commonly known as Burdock, have the potential to cure illnesses such as Leukemia and neurological disorders like Alzheimer's disease, with the help of non-cellular assays?

## Materials

- Round Bottom
- Burdock (leaves)
- Ethanol
- Methanol
- H<sub>2</sub>O
- Cells
- Graduated cylinder
- Evaporator Bath
- Vials
- Beaker
- Thermometer
- Scale
- Filter
- Funnel
- Vial
- Pipette
- Nanodrop
- DMSO
- DPPH
- Folin
- Spectrophotometer
- Acetone
- Microplate
- Gallic Acid
- Folin phenol
- Syringe
- Microcentrifuge

## Methods

- Extraction
- Filtration
- Evaporation
- DPPH Assay
- Gallic Acid Assay

