

# Study and Characterization of Zea mays Stigma Extract: An Alternative to Obtain Eugenol

Krohn, Muriel (School: Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha)

Ferreira, Maria (School: Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha)

The Brazilian popular medicine is an empirical knowledge, passed down through generations, that associates the use of plants and other natural elements for diseases treatment. As an example, tea of Zea mays stigma (corn silk) is used for the treatment of urinary infection, although there is no scientific evidence. Urinary tract infection is a common disease, usually caused by bacteria such as Escherichia coli and Staphylococcus aureus, which affects more than 150 million people annually worldwide. Among the various symptoms that can occur in patients affected by this disease, there are persistent pain, fever and discomfort when urinating. This research had as objective to prove the effectiveness of substances extracted from this plant, as well as to understand the reason of such phenomena. Extractions were made through different methods, followed by purification of the extract, which were tested in Gas Chromatograph in order to identify the compounds present in it. In addition, the antimicrobial susceptibility and the minimal inhibitory concentration were determined with the microorganisms causing urinary infection. The results obtained were positive, considering that the extracted compound presented inhibitory activity in the tested bacteria. The presence of considerable amounts of eugenol, an organic compound with proven antimicrobial activity, has been found, justifying the popular knowledge and its use as tea. This compound was subsequently isolated, which represents an alternative extraction of eugenol, since the stigma used doesn't have defined applications and the extraction method elaborated has a lower energy expenditure when compared to the current one.

## Awards Won:

Fourth Award of \$500

Arizona State University: Arizona State University Intel ISEF Scholarship

Arizona State University: Arizona State University Intel ISEF Scholarship