

A PROJECT REPORT ON:

Olfactory system

SUBMITTED TO:

DEPARTMENT OF ZOOLOGY

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)



[स्वायत्त] कोल्हापूर

**IN THE PARTIAL FULFILLMENT OF BACHELOR OF SCIENCE IN
ZOOLOGY**

IN THE YEAR: 2021-2022

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Roll no : 8040

CLASS B. Sc. III

UNDER THE GUIDANCE OF

DR. T. C. GOUPALE.

Assistant Professor,

Vivekanand College, Kolhapur (Autonomous)



DECLARATION

We the undersigned students, declare that the project entitled, **OLFACTORY SYSTEM** is submitted by us under the supervision of Dr. T. C. Goupale, Assistant Professor, Department of Zoology, Vivekanand College, Kolhapur (Autonomous).

It is our original work. The empirical findings in this project are based on the data collected by us and it is authenticable to the best of our knowledge. The presented matter is not copied from any other source.

Place: Kolhapur

Date: 31-5-22

Ankita Raghunath Jadhav


CERTIFICATE

This is to certify that the project entitled, **OLFACTORY SYSTEM** being submitted herewith for the Degree of **Bachelors of Zoology** to the Department of Zoology Vivekanand college, Kolhapur (Autonomous) Affiliated to Shivaji University, Kolhapur, under the faculty of Science is the result of the original work completed by **Ankita Raghunath Jadhav** under my supervision and guidance and to the best of my knowledge and belief, the work embodied in this project has not formed earlier.

Place: Kolhapur

Date:


Project Supervisor


Dr. G. K. Sontakke
Head,
Department of Zoology
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Examiner

[स्वायत्त] कोल्हापूर



ACKNOWLEDGEMENT

I wish to express my deepest sense of gratitude to my project supervisor **Dr. T. C. Goupale** for his/ her continuous help and valuable guidance during the entire period of my Project work. It is a genuine pleasure to express my deep sense of thanks to **Dr. G. K. Sontakke** Head, Department of Zoology, Vivekanand College Kolhapur (Autonomous) for administrative help and encouragement during the Project work. I express my profound thanks to **Dr. R. R. Kumbhar** Principal, Vivekanand College Kolhapur (Autonomous) for his constant support and inspiration.

I am also thankful to other faculties of Department of Zoology who have directly or indirectly guided and helped me in the Project work.

I am also thankful to non-teaching staff for their constant co-operation during project work

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INTRODUCTION

Black Molly

Fish black molly (*Poecilia sphenops*) is small live bearer fish and most popular fish in the aquarium hobby. It is native of South America and Central America, and can be found from Venezuela in the south, to Mexico in the north. It is also found on several Caribbean islands, and in recent years has become established as an invasive species in Japan, parts of the United States and in scattered pockets in Eastern Europe. Now a day it id speeded all over the world as a popular aquarium fish.

It is primarily inhabit in freshwater streams in the wild. It is also found living in brackish coastal sea waters and swamps. The black mollies are a brackish water fish, and while they are highly adaptable to salt water conditions but they prefer a freshwater environment.

SCIENTIFIC CLASSIFICATION

KINGDOM	Animalia
PHYLUM	Chordata
CLASS	Actinopterygii
ORDER	Cyprinodontiformes
FAMILY	Poeciliidae
GENUS	<i>Poecilia</i>
SPECIES	<i>sphenops</i>

Morphology of Black Molly

Poecilia sphenops is a teleost fish, of the genus *Poecilia*, known under the common name molly. It is sometimes also called short-finned molly or common molly. They inhabit fresh water streams and coastal brackish and marine waters of Mexico. The wild-type fishes are dull, silvery in color. The molly can produce fertile hybrids with

many *Poecilia* species, most importantly the sailfin molly. The male mollies generally tend to be mildly aggressive. Mollies rank as one of the most popular feeder fish due to high growth rate, birth size, reproduction, and brood number.

The average adult fish size: 5-10cm and the place of origin of this fish is central America. Molly's are a very popular aquarium fish, and don't require anything special. A peaceful community aquarium with at least 2 females should be kept to each male, so they aren't continually harassed. Also for the same reason, a tank housing both male and female Molly's would ideally contain plants so the females can get out of the way of the male. Temperature required for the culture of fishes is 21 – 28 °C and pH 7.5 – 8.5. Molly's should be fed once or twice a day. All food should be consumed after just a few minutes. If not, you are feeding your Molly too much food in one serving. The flake food specially made for tropical fish, such as the Molly in your fish store. A flake food diet is a good base for the Molly, but should ideally be supplemented with live food. Molly will survive on flake food alone, but the live food makes the Molly more well-nourished and healthier. Live or frozen Brine Shrimp is a popular Molly fish food since Brine Shrimp is very easy to produce at home. Bloodworms, Micro Worms, Fruit Flies, Mosquito larvae, Daphnia and chopped up Earthworms are other examples of suitable food for your Molly. Males are more slender, females more round. Males also have a modified anal fin.



Black molly (*Poecilia sphenops*)

A PROJECT REPORT ON

**PHYTOCHEMICAL ANALYSIS OF ETHANOLIC EXTRACT
OF *ACMELA CALVA* AND ITS ANTIMICROBIAL ACTIVITY**

DEPARTMENT OF ZOOLOGY

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)



(स्वायत्त) कोल्हापूर

IN THE PARTIAL FULFILLMENT OF BACHELOR OF SCIENCE IN ZOOLOGY

IN THE YEAR: 2021-2022

ADITI SUDHIR YADAV

CLASS B. Sc. III

ROLL NO.: 8055

UNDER THE GUIDANCE OF

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**ASSISTANT PROFESSOR,
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DECLARATION

I the undersigned student, declare that the project entitled “**PHYTOCHEMICAL ANALYSIS OF ETHANOLIC EXTRACT OF *ACMELA CALVA* AND ITS ANTIMICROBIAL ACTIVITY**” is submitted by me under the supervision of **Dr. Sneha Desai**, Assistant Professor, Department of Zoology, Vivekanand College, Kolhapur (Autonomous).

It is our original work. The empirical findings in this project are based on the data collected by me and it is authenticable to the best of our knowledge. The presented matter is not copied from any other source.

Place: Kolhapur

Date: 27/05/2022

Adav
ADITI SUDHIR YADAV



ACKNOWLEDGEMENT

I wish to express my deepest sense of gratitude to my project supervisor **Dr. S. S. Desai**, for her continuous help and valuable guidance during the entire period of my Project work. It is a genuine pleasure to express my deep sense of thanks to **Dr. G. K. Sontakke** Head, Department of Zoology, Vivekanand College Kolhapur (Autonomous) for administrative help and encouragement during the Project work. I express my profound thanks to **Dr. R. R. Kumbhar** Principal, Vivekanand College Kolhapur (Autonomous) for his constant support and inspiration.

I am also thankful to other faculties of Department of Zoology who have directly or indirectly guided and helped me in the Project work.

I am also thankful to non-teaching staff for their constant co-operation during project work

ADITI SUDHIR YADAV


CERTIFICATE

This is to certify that the project entitled, “**PHYTOCHEMICAL ANALYSIS OF ETHANOLIC EXTRACT OF *ACMELA CALVA* AND ITS ANTIMICROBIAL ACTIVITY**” being submitted herewith for the Degree of **Bachelors of Zoology** to the Department of Zoology Vivekanand College, Kolhapur(Autonomous) Affiliated to Shivaji University, Kolhapur, under the faculty of Science is the result of the original work completed by **Aditi Sudhir Yadav** under my supervision and guidance and to the best of my knowledge and belief, the work embodied in this project has not formed earlier.

Place: Kolhapur

Date:27/05/2022


Project Supervisor


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Examiner

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1. INTRODUCTION:

Unrestricted access and indiscriminate use of existing antibiotics in the treatment of infectious diseases has led to drug resistance worldwide [Chatterjee *et al.*, 2011]. Thus, scientists are in search of antimicrobial agents that are effective against pathogens which are resistant to currently available antibiotics [Roca *et al.*, 2015]. Previous studies have shown that 80% of the world population currently use plant-based traditional medicine for their health care needs [WHO 2014]. In addition to the mechanisms of action identified in known antibiotics, natural antimicrobial components in plants can also inhibit the growth of bacteria by unknown mechanisms [Chatterjee *et al.*, 2011]. The medicinal value of these plants may originate from the chemically active substances that produce a marked physiological action in the human body, such as inhibition of bacterial protein biosynthesis, cell wall biosynthesis, DNA replication and repair, cell membrane destruction, and inhibition of a metabolic pathway [Jamshidi-Kia *et al.*, 2018; Khameneh *et al.*, 2018]. Consequently, it is of great interest to search for new antimicrobials from plants to validate their use in traditional medicine and to expose the active principles by isolation and the characterization of active constituents [Bag *et al.*, 2012]. *Staphylococcus aureus* has long been recognized as one of the most important bacteria that causes disease in humans. It is the leading cause of skin and soft-tissue infections such as abscesses, furuncles, impetigo, and cellulitis. The emergence of antimicrobial resistance in *S. aureus* has resulted in limited treatment options against certain infections such as pneumonia, meningitis, osteomyelitis, and endocarditis [Boucher *et al.*, 2010]

Acmella calva (DC.) (Synonym: *Spilanthes acmella* (L.) Murr) is an important medicinal and ornamental plant belonging to Asteraceae family, commonly known as “Akarkara” or “toothache plant” [Yadav and Sing 2011]. It grown in the tropics and subtropical parts of the world and can be found in damp pastures, at swamp margins, on rocks near the sea and as a weed of roadsides [Singh and Chaturvedi 2010]. It is an erect annual herb attaining a height of 50 - 60 cm and it has yellow cone like flowers [Purabi and Kalita,2005]. The genus consists around 60 species [Willis JC, 1977] spread throughout Mexico and Central America, Cuba, Curacao, India and Tanzania [Jansen RK 1985]. In India, the plants have been growing in the northern and southern hills and plateaus. There are around five species of *Spilanthes* are growing in India [Pandey *et al*

2007]. The extract of this genus has been used as folk medicine since ancient times to cure severe toothache, affections of throat and gums, stomatitis, paralysis of tongue, and psoriasis [Anonymous. The Wealth of India 1989].

The present investigation was designed to study the in vitro antibacterial potential of ethanol, extracts of *Acmella calva* against human pathogenic bacteria and also to characterize the putative compounds responsible for this activity using phytochemicals screening with the intention of evaluating the activity of the plant for its possible pharmaceutical applications in future.

2. AIM AND OBJECTIVE:

Aim:

To study the Antibacterial activity of *Acmella calva*

Objectives:

1. Collection & Identification of plant material.
2. Extraction & Phytochemicals detection of Extract
3. Determination of antibacterial activity.

3. REVIEW OF LITERATURE:

All parts of the plant are acrid but the flowers are by far the most pungent. The pungent flavour of paracress is due to an unsaturated alkamide, spilanthol, which reaches its highest concentration (1%) in flowers [Ramsewak *et al.*, 1999]. Worldwide the flower heads are powdered and used to treat toothache, throat and gum infections [Gasquet, 1993]. The flower heads have been well documented for its uses as spices, antiseptic, anti-bacterial, anti-fungal, anti-malarial and as remedy for flu, cough, rabies diseases and tuberculosis [Burkill, 1966; Oliver- Bever, 1986; Di Stasi *et al.*, 1994; Akah and Ekekwe, 1995; Singh, 1995; Storey and Salem, 1997]. The plant is said to be a popular remedy for stammering in children in western India. The plant is further recommended as a cure for dysentery, rheumatism and to enhance the immune system [Gasquet, 1993]. The principle