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nbmeditor@gmail.com

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A Medicinal Plant's Extract Effective on Osteoarthritis

Adekunle Odunayo Adejuwon [1, 2, 3, 4*], Olaleke David Odeleye [4], Okikioluwa Ayoade Odewale [5], Joseph Omololu-Aso [6], Victoria Anatolyivna Tsygankova [7]

[1] Department of Biological Sciences, Faculty of Science, Kings University, Ode-Omu, Osun State, Nigeria
[2] National Research Foundation of Ukraine (NRFU), Maksymovych Scientific Library of The Taras Shevchenko Kyiv National University Kyiv, Volodymyrska Street 58, Office Number 38 Ukraine, East Europe
[3] The European Science Foundation College of Expert Reviewers (The European Union (EU)); and The European Science Foundation College of Review Panel Members (The European Union (EU)), Offices: 1, Quai Lezay-Mamesia-BP 90015, 67008 Stasbourg, Cedex, France, Western Europe
[4] Medwave Company Limited, Istanbul, Istanbul Province, Republic of Turkey, Southeastern Europe/Western Asia
[5] Department of Nursing, Lead City University, Ibadan, Nigeria
[6] Department of Microbiology, Obafemi Awolowo University, Ile-Ife, Nigeria
[7] Department for Chemistry of Bioactive Nitrogen-Containing Heterocyclic Compounds, Institute of Bioorganic Chemistry and Petrochemistry of the National Academy of Sciences of Ukraine, 1, Murmanskaya Str., 02660, Kyiv, Ukraine

Corresponding Author:
Professor Adekunle Odunayo Adejuwon, B.Sc., M.Sc., Ph.D. (Microbiology – Microbial Physiology and Metabolism – Microbial Enzymology), LL.Dip. (Diploma in Laws), Department of Biological Sciences, Faculty of Science, Kings University, Ode-Omu, Osun State, Nigeria; And Professor Adekunle Odunayo Adejuwon, B.Sc., M.Sc., Ph.D. (Microbiology – Microbial Physiology and Metabolism – Microbial Enzymology), LL.Dip. (Diploma in Laws) (Voluntary International Referee – Professor of Microbiology), National Research Foundation of Ukraine (NRFU), Maksymovych Scientific Library of The Taras Shevchenko Kyiv National University Kyiv, Volodymyrska Street 58, Office Number 38 Ukraine, East Europe; The European Science Foundation College of Expert Reviewers (The European Union (EU)); and The European Science Foundation College of Review Panel Members (The European Union (EU)), Offices: 1, Quai Lezay-Mamesia-BP 90015, 67008 Stasbourg, Cedex, France, Western Europe
e-mail address: ao_adejuwon@yahoo.ca
ORCID Identifier: https://orcid.org/0000-0001-9404-874X
Loop Profile: 1019729, https://loop.frontiersin.org/people/1019729/overview
Publons: https://publons.com/researcher/1487222/adekunle

Abstract: Background: Infection with bacteria or viruses including HIV, parvovirus, alpha viruses, hepatitis viruses B and C can lead to acute or chronic forms of arthritis. Arthritis seems prevalent in women than in men in the United States of America. It affects the middle aged and aged in Nigeria, West Africa. Osteoarthritis has been reported to affect 0.4% of the populace in the Nigerian rural setting. **Investigation:** 500g of the root bark of *Philenoptera cyanescens* was ground and added to 1L of 95% alcohol (Sigma-Aldrich). The extract was left overnight for 24 hr. The extract was filtered and concentrated to about one-sixth of its original volume in *vacuo* using a rotary evaporator (Quick fit, Rotavapor-R, Buchi, Switzerland) at 30^{o}C under low vacuum pressure and low evaporation. 100ml of the concentrated extract was given orally to ten human subjects (n= 5 males; n=5 females) diagnosed with osteoarthritis. The ten subjects were diagnosed with osteoarthritis at the Medical Out-Patient (MOP) Unit of the University College Hospital, Ibadan, Nigeria. Oral application of extract to subjects was immediately after meal on a daily basis for a period of eight days. **Observation:** All subjects were able to walk properly within eight days of oral application of plant's extract. Ability to walk properly improved gradually after the period of the oral application. **Conclusion:** The concentrated alcohol extract the root bark of *Philenoptera cyanescens* was effective and improved the ability to walk in patients with osteoarthritis.
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Keywords: Osteoarthritis; *Philenoptera cyanescens*; Root bark; Alcohol extract; Infection

1. Introduction

Arthritis which is inflammation of the joint is caused by infection (with bacteria or viruses) or injury to the joint [1]. About 54.4 million adults (18 years and older) have been diagnosed with arthritis in the United States of America in recent years with a slightly higher incidence in women than in men [2]. About 12.3% of the Nigerian populace has been diagnosed with rheumatoid arthritis. Osteoarthritis has been reported to affect 0.4% of the populace in the Nigerian rural setting [3]. Plants of medicinal value are used locally in Nigeria, West Africa for the treatment of arthritis [4].

In this investigation, a concentrated alcohol extract of the root bark of *Philenoptera cyanescens* was given orally to ten adult human subjects diagnosed with osteoarthritis. This was with the view to determining the extract's potential on osteoarthritis in the subjects.

2. Materials and Methods

Identification of Plant Sample

The root bark of *Philenoptera cyanescens* were sourced and obtained at the environ of the University of Ibadan, Ibadan, Nigeria. They were identified in the Herbarium of the Department of Botany, University of Ibadan, Ibadan, Nigeria by Professor Taiye R. Fasola of the same department. The root barks were kept in cellophane bags at room temperature prior to start of analysis.

Preparation of Extract

500g of the root bark of *Philenoptera cyanescens* were ground and added to 1L of 95% alcohol (Sigma-Aldrich). The extract was left overnight for 24 hr. The extract was filtered and concentrated to about one-sixth of its original volume in *vacuo* using a rotary evaporator (Quick fit, Rotavapor-R, Buchi, Switzerland) at 30^{o}C under low vacuum pressure and low evaporation [5].

Study Population

The study population spanned ten adult individuals (n= 5 males; n=5 females) within the age range of 50 years – 80 years within Ibadan metropolis, Ibadan, Nigeria diagnosed with osteoarthritis at the Medical Out-Patient Unit of the University College Hospital, Ibadan, Nigeria. All the patients were unable to walk properly.

Oral Application of Extract

Ten (10) adult human subjects diagnosed with osteoarthritis with inability to walk properly participated in this research investigation. Their consent to participate in the investigation was obtained after ethical approval from the University College Hospital Research Committee. 100ml of the concentrated extract was given orally to the ten subjects. Oral application of extract to subjects was immediately after meal on a daily basis for a period of eight days.

3. Results

All the human subjects were able to start walking properly within eight days of oral application of the plant's extract. Ability to walk properly improved gradually even after the period of oral application of the extract.

4. Discussion

Osteoarthritis is a serious disease with increasing impact worldwide [6]. Internationally it is the most common articular disease. Estimates of its frequency vary across populations [7]. Risk factors to osteoarthritis include obesity and joint injury [8]. Osteoarthritis is highly prevalent in the United States of America and around the globe. It is a leading cause of disability and can negatively affect people's physical and mental well being [9]. Infection with bacteria or viruses including HIV, parvovirus, alpha viruses, hepatitis viruses B and C can lead to acute or chronic forms of arthritis [10]. In Nigeria, West Africa, medicinal plants are used locally in the treatment of arthritis [4]. It was observed in this research investigation that the concentrated alcohol extract of the root bark of *Philenoptera cyanescens* was effective on the ability to walk properly in patients with osteoarthritis, hence the need for further studies.

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Corresponding Author:

Professor Adekunle Odunayo Adejuwon, B.Sc., M.Sc., Ph.D. (Microbiology – Microbial Physiology and Metabolism – Microbial Enzymology), LL.Dip. (Diploma in Laws), Department of Biological Sciences, Faculty of Science, Kings University, Ode-Omu, Osun State, Nigeria; And Professor Adekunle Odunayo Adejuwon, B.Sc., M.Sc., Ph.D. (Microbiology – Microbial Physiology and Metabolism – Microbial Enzymology), LL.Dip. (Diploma in Laws) (Voluntary International Referee – Professor of Microbiology), National Research Foundation of Ukraine (NRFU), Maksymovych Scientific Library of The Taras Shevchenko Kyiv National University Kyiv, Volodymyrska Street 58, Office Number 38 Ukraine, East Europe; The European Science Foundation College of Expert Reviewers (The European Union (EU)); and The European Science Foundation College of Review Panel Members (The

European Union (EU)), Offices: 1, Quai Lezay-Mamesia-BP 90015, 67008 Stasbourg, Cedex, France, Western Europe.
e-mail address: ao_adejuwon@yahoo.ca
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Publons:
https://publons.com/researcher/1487222/adekunle

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