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Short Communication

Efficacy and Safety Evidences of Ethiopian Medicinal Plants Traditionally Used For the Treatment of Rabies

Alan H Rosenstein*

Department of Medicine, University of Louisville School of Medicine, Kentucky, USA

ABSTRACT

Rabies vaccines are physically inaccessible and economically unaffordable, and traditional medicinal plants are options for rabies management in different parts of Ethiopia. However, most of these plants have not been scientifically investigated. The main aim is to provide an up-to-date overview of the safety and efficacy data of medicinal plants used traditionally for the management of rabies in Ethiopia. A website-based search strategy was employed. Accordingly, various medicinal plants have been used in treatment of rabies in Ethiopia on basis of traditional uses. However, there is limited scientific evidence to establish the safety and efficacy of these medicinal plants. More studies with adequate methodological quality in order to investigate the efficacy and safety of those traditional medicinal plants are needed.

Keywords: Efficacy; Medicinal plants; Rabies; Safety

INTRODUCTION

Even though rabies has been preventable by vaccination since the 19th century, it still causes more human deaths than any other zoonotic disease. Rabies is a virus that is usually spread by the bite or scratch of rabid animal and causes inflammation of the brain in humans and other mammals. Transmission of RABV to humans through inhalation and organ transplantation such as corneal transplant from an infected donor has also been suggested. No successful cure for Rabies has yet been found, by the time the symptoms appear, it is generally too late to save the patient. The only way to prevent death is the rabies Post-Exposure Prophylaxis (PEP), which is a serial vaccination against rabies starting as soon as possible after the patient, was bitten by a suspected rabid animal. The correct application of inactivated tissue culture-derived vaccines is highly effective at preventing the development of rabies, and very few failures are recorded. Sheep brain derived Fermi type rabies vaccine is still being manufactured at the Ethiopian Health and Nutrition Research Institute and utilized for the majority of exposed patients in Ethiopia [1]. It has been a common practice to provide post-exposure vaccines to humans bitten by dogs irrespective of their rabies status. This increases the risk of complications associated with the Fermi type vaccines, as this vaccine accounts for 88% of the vaccines used throughout.

In Ethiopia people have no clear understanding on the danger of rabies and believe to cure with different traditional and religious treatment rather than seeking effective post exposure prophylaxis. Eighty percent of the Ethiopian people depend on traditional medicine for their health care, and more than 95% of traditional medicinal preparations in Ethiopia are made from plant origin [2]. Numerous plant species are used to treat diseases of infectious origin like, rabies. The wide spread use of traditional medicine among both urban and rural population in Ethiopia could be attributed to cultural acceptability, efficacy against certain type of diseases, physical accessibility and economic affordability as compared to modern medicine. Various traditional antirabies folk drugs were reported which were used for the treatment of rabies in both humans and animal. In different ethnic groups of the country, about twelve traditional plants were reported by different investigators for the treatment of rabies in animals and humans [2,3].

Using a web-based literature search technique, the study was conducted based on the available literature on frequently used traditional medicinal herbs for the treatment of rabies [3]. The data for this were derived from published research findings on

Correspondence to: Alan H Rosenstein, Department of Medicine, University of Louisville School of Medicine, Kentucky, USA, E-mail: ahrosensteinmd@alh.com

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Ethiopian traditional medicinal plants in various peer-reviewed journals and conferences by utilizing the search terms, Rabies in Ethiopia, medicinal plants, ethno botanical studies, and anti-rabies activity. Additional literature was sourced, including preelectronic literature such as dissertations, theses, and other items.

Ethiopian antirabies plants

The Ethiopians employed a wide variety of traditional treatment in cases of bites by dogs believed to be rabitic. It was given free of charge to anyone in need, and was supposed to be one hundred percent successful. Most traditional Ethiopian medicines for rabies came from the vegetable kingdom [4].

Efficacy and safety

Traditional medicinal plants have been considered safe as a result of the long history of use in the treatment of diseases based on knowledge accumulated over several centuries. The belief that herbal-based healthcare products are safe and devoid of side effects is untrue and misleading. Herbs have been found to be capable of producing a wide range of side reactions; like, causing serious injuries, life-threatening conditions, and even death [5]. This is due to confusing nomenclature and inaccurate plant identification; lack of pharmaceutical-level quality control at all stages of production; variations in levels of active ingredients in different plant parts and plants harvested at different stages of development; the geography, weather, soil, and other conditions specific to individual plants. Recent scientific research has shown that many plants used as food or in traditional medicine are potentially toxic, mutagenic and carcinogenic.

Generally, medicinal plants were suggested to exert two types of adverse effects. The first is inherent to the consumed plant and includes toxicities related to an over-dosage and interaction with conventional drugs. The second is related to extrinsic factors such as the quality of the product, which may interfere with the merit of herbal therapy. Adverse fatal side effects and cases of rabies deaths after traditional treatment with medicinal plants were the most problems reported by some health centers, like Ethiopian Public Health Institute (EPHI) in Ethiopia. Out of 80 plant species reported for their antirabies activities in Ethiopia, only 5 were scientifically investigated *in vivo* and/or *in vitro*. These were *Phytolacca dodecandra, Justica schimperiana, Croton macrostachyus, Salix subserrata and Silene macroselen* and the evidence for their efficacy and safety discussed below [6].

CONCLUSION

The use of medicinal plants for the management of rabies is frequent in Ethiopia. Very few attempts have been made on different plant extracts used for the management of rabies in Ethiopia. However, even those most commonly used medicinal plants have not been fully investigated for their safety and antirabies activities. The chemical compounds responsible for its anti-rabies activity is still not known. To fully understand the pharmacological and toxicological properties of those medicinal plants, it is important to study photochemistry of such plants. A link should have made between the traditional uses of a plant part, the active compounds isolated from it and pharmacological tests confirming or not confirming the activity of these active compounds or of the plant extracts containing active compounds.

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