

# Evaluation of commonly used tribal and traditional remedies in Saudi Arabia

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## ABSTRACT

There are several compounds used in traditional prescriptions and as cosmetics, among several tribes in the Kingdom of Saudi Arabia. Nothing pertinent in the literature exists regarding the components and health hazards of these compounds. There are no health education programs to warn the community especially high-risk populations (such as sickle cell anemia and diabetes mellitus patients) of the hazards involved in the use of the traditional preparations. Tradition and folk medicine continue to be used in many developing countries, including the Kingdom of Saudi Arabia. For physicians who are not accustomed to dealing with this entity, particularly when the patients are children, the presentation of an infant with multiple scars can be an upsetting event. It is unlikely that such native medical practices will disappear in a short time. The objective of this review is to highlight the importance of this entity for physicians and practitioners to understand the treatment and the perception of the patient or their relatives. The review also provides our experience in evaluating the plant remedies which were used by our patients.

**Keywords:** Tribal, traditional remedies.

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The use of plants and herbs in medical prescriptions dates back to early ages of the Greeks and Romans.<sup>1</sup> They collected information and recorded in some detail their conclusions concerning the useful, medicinal, or toxic characteristics of the natural world. However, it went into eclipse during the Dark Ages, surviving largely as manuscripts copied from generation to generation and used as transcripts. Then came the artisan era, when they compounded recipes with many esoteric ingredients used for medicinal or poisonous purposes.<sup>2</sup>

Although incomplete, figures on the incidence of human poisoning by herbs and plants, show they are responsible for more than 4% of the poisoning cases reported in the United States of America (National Clearing House for Poison Control Centers).<sup>3</sup> Approximately 700 species of North American plants are considered to be poisonous.<sup>4</sup> More than 400 traditional plant treatments for diabetes mellitus have been recorded, but only a small number of these have received scientific and medical evaluation to assess

their efficacy. Traditional treatments have mostly disappeared in occidental societies, but some are prescribed by practitioners of alternative medicine, or taken by patients as supplements to conventional therapy. However, plant remedies are the mainstay of treatment in underdeveloped regions.

**Identification of commonly used compounds and their importance.** Poisonous species of plants are scattered throughout the plant kingdom, from algae to ferns to gymnosperms.<sup>5</sup> In the Mediterranean area, there are thousands of plants which have been used extensively as "traditional prescription" with little or no information regarding their toxicity.<sup>6</sup> Toxicity from using herbal and "traditional prescriptions" vary not only with species of plants used, but also with sex, age, and other environmental factors as the result of the use of pesticides or contamination with metalloids. Beside the use of these different categories of plants, flora, some of the ingredients for the "traditional prescriptions" contain metalloids such as lead, arsenic, and nickel.<sup>7</sup> The most common

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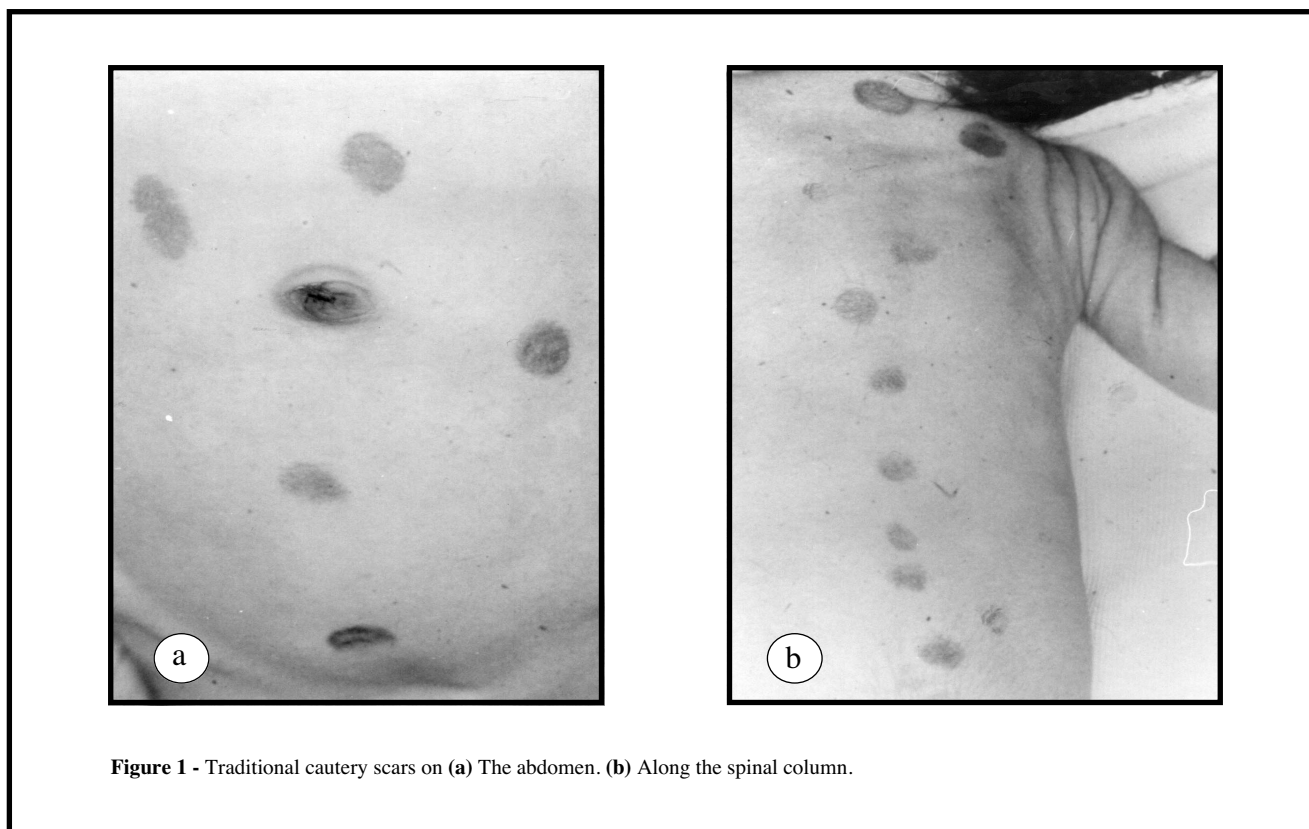
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poisonous categories in plants, floral, or herbal extracts can be summarized as follows: (modified from Kingsbury)<sup>7</sup> Alcohol's, Alkaloids, Polypeptides, Amines, Glycoside-glucosides. Toxicity to some plants has been determined and found to cause irritation in the mouth, esophagus, and stomach of experimental animal and human accidental poisoning especially among children.<sup>8</sup> Most of the absorption of these compounds takes place in the lower gut.<sup>8</sup> After absorption of the compounds it reaches the blood stream and arrives first to the liver. These compounds could be hepatotoxins leading to disturbance of liver function with destructive and regenerative changes.<sup>9</sup> Some hypoglycemic poisonous principles in plants reduces the glycogen content of the liver to nearly zero.<sup>10</sup> Disturbance of elimination of bile pigments by the liver has been reported as one of the poisonous effects of some plants.<sup>11</sup> Coumarin, contained in sweetcloves hay, is converted to dicoumarin by molds and this interferes with prothombin synthesis resulting in hemorrhagic diseases. Soluble oxalates in some plants can result in precipitation of calcium ions resulting in ionic imbalances with its neurologic consequences. Tannins in plants can cause crystallization of oxalates in the kidney and subsequent renal diseases. There are several alkaloids in plants, some of these are found to be hypotensive and affect the heart, both the musculature and the conducting system. Braken fern an example of a plant used in traditional prescriptions, contains 2 toxins, thiamine and a lower acting agent on the bone marrow.<sup>12</sup> The compounds affect the bone marrow leading to thrombocytopenia and in some chronic cases stimulate the leukocytes leading to increased division of white blood cells and interferon production.<sup>13</sup> Other investigators reported that plants and their extracts are accompanied by untoward effects on the lungs, thyroid gland (goitregenic effect), nervous system, reproductive system, respiratory system and the skin and hair.<sup>13</sup> Heme biosynthesis has been studied extensively, and the major levels depend on enzyme activity such as delta amino levulinic acid dehydrase (d-ALAD), protophoryinogenase and others.<sup>13</sup> Lead is known to affect d-ALAD and causes its inhibition leading to anemia due to decreased heme synthesis. Arsenic is known to inhibit the following enzymes: Glutamic-oxaloacetic oxaloacetic transaminase, Pyruvate oxidase, Monoamine oxidase, Choline oxidase, Glucose oxidase and urease. These enzymes are essential in the anaerobic glycolysis as well as the tricarboxylic acid cycle. In 1963 Lehman<sup>14</sup> discovered the presence of sickle cell gene in high frequencies in the eastern province of the Kingdom of Saudi Arabia, an observation confirmed by other workers.<sup>15,16</sup> There are several enzymes proved to be deficient and abnormal in these cases of sickle cell anemia and traits such as glucose-6-phosphate dehydrogenase, glutathione transferase and others.<sup>17,18</sup> These enzymes

are needed for proper regeneration of the red cell membrane. Lead and other metalloids are found to cause inhibition of these enzymes, which adds more risk to the patient. The cause of painful crisis of sickle cell disease is often obscure, though it may be precipitated by infection, especially malaria, by acidosis, by pregnancy, especially the last trimester of pregnancy, climate and other environmental factors.

***Tribal and traditional remedies.*** In almost every community of the developing and under developed countries, traditional prescription as well as local medicines are used. The composition of most of these local medicines is not known as they are passed on from one generation to the other by word of mouth. It is reassuring to note that in areas of high prevalence for sickle cell gene, screening programs are being implemented in order to identify individuals with sickle cell disease (SCD) and sickle cell trait<sup>19</sup> so that appropriate counseling may be offered, and if necessary prophylactic and definitive therapeutic measures adopted. During the SCD project at King Faisal University, Dammam to define the natural history of SCD in the eastern province of the Kingdom of Saudi Arabia,<sup>20</sup> the SCD was diagnosed in 291 newborns and appropriate records established counseling offered. We have attempted during follow up of our patients to study the practices of local healers in the eastern province of the Kingdom of Saudi Arabia, and have tried to assess the possible useful or harmful results of these practices. Cautery is very commonly used by the local healers (Figures 1a and 1b). In fact it is a very ancient treatment among Arabs<sup>21</sup> and has been frequently mentioned in arabian medical books of the past. Iron rods of various sizes and shapes with sharp, broadened or pointed ends are used. The instruments are used while it is glowing red. The heated end of the cautery is used employing either a fine touch or firm pressure. The site of application varies with different diseases. In SCD, it is usually applied to the site of pain. In pneumonia the cautery is used over the intercostal space, usually the 3rd to 5th spaces. In jaundice the cautery is applied below the angle of the jaw, on the back of the chest, back of the thigh, over the metatarsophalngeal joints and in the epigastric region. In gastroenteritis the cautery is applied around the umbilicus and between the eyebrows. For other diseases different sites are used. Cautery, though widely used in local practice, has limited or no value in treatment. In fact, this practice should be abolished as not only does the patient suffer from the agony or pain from burns caused by cautery but also he is left with permanent scars on the body. The burns get frequently infected and the patient often comes to the hospital for treatment. Another practice in which the local healers indulge is blood letting. They believe that in certain diseases the blood is bad and the body must get rid of this evil



**Figure 1** - Traditional cautery scars on (a) The abdomen. (b) Along the spinal column.

blood. Once bleeding is induced by the local healer, it is continued till the "black" blood is run off and blood with "lighter" color appears. In the usual method of bleeding the arab head-dress is put around the neck and is twisted till congestion of the veins of the head occurs, then a forehead vein is cut with a sharp razor and 60-120 ml of blood is let out. In severe pneumonia the patient is asked to curl up his tongue and one of the small lingual veins is cut. In a less severe form of pneumonia the dorsum of the hand is used for bleeding and up to 500 ml of blood may be collected depending upon the whim of the local healer. This practice of blood letting needs strong condemnation. If a patient with SCD gets pneumonia and his pneumonia is treated by the local healer by blood letting, one can well imagine the fate of the patient who is already anemic. There are reports of cases who have bled to death during the practice of blood letting. Kohl is a local cosmetic which is very commonly used by the Arab woman and girls to blacken and beautify their eyes. It is usually applied to the inside edges of the upper and lower eyelids and may also be used to darken eyelashes and eyebrows. In addition to its use as a cosmetic, Kohl has been used for topical folk treatment of eye disease. Tradition holds, that kohl, when instilled in to the conjunctival sac, protect against eye disease, promotes good visual acuity and cures conjunctivitis. Even today Kohl is painted on

the eyelids of babies to protect against eye infections<sup>22</sup> Kohl contains a substantial amount of lead and its continuous use can cause chronic lead poisoning. Furthermore Kohl that is commercially available in the Kingdom of Saudi Arabia, is contaminated with bacteria and fungi. Since trachoma is highly prevalent in the Kingdom of Saudi Arabia treatment of red eyes with Kohl may lead to secondary infection.<sup>23</sup> It is believed that secondary bacterial conjunctivitis may aggravate the course of trachoma and may contribute to conjunctival cicatrization.<sup>24</sup> The most commonly available Kohl today is produced in India and countries of the arabian peninsula by burning together gum arabic or almonds, incense in kerosene, and then collecting the root to form the kohl powder. Other unknown ingredients are also used. The chemical analyses of Kohl showed the presence of both saturated and unsaturated aliphatic hydrocarbons.<sup>25</sup> Aliphatic hydrocarbons are known to promote carcinogenesis.<sup>26</sup> Local herbs are widely used in the Kingdom of Saudi Arabia for the treatment of different ailments. There are large numbers of local herbs employed for this purpose. We shall mention a few of them which are used for common symptoms of SCD. The leaves and flowers of *Archillae fragrantissima* (Arabic name Qaysoom) are dried and powdered. This powder is added to water or tea to relieve pain and expel wind from the

stomach and the bowels. Cassia senna (Arabic name senna mekki) is another herb whose dried and powdered leaves are applied to wounds and burns. The leaves of cymbopogon shoenanthus (Arabic name Ithkhir) are boiled in water, and this water is taken for the cure of lung and stomach disorders. *Francouria crispa* (Arabic name Jethjath) is used for lung diseases. Its shoot is boiled in water which is taken 3 times daily. For the treatment of body pains the shoot of a herb called Hammadea (Arabic name Rimth) is boiled in water and the whole body or the affected part is exposed to its vapors. *Ricinus communis* is plant (Arabic name Gar of Kharwa) of which all parts of this shrub are used as herbal remedies. The fresh leaves are moistened with vinegar and put around the head to relieve headache or fever. Fresh leaves are also applied to the stomach for treatment of stomach ailments, heated and oiled leaves are applied locally to painful joints, swollen and inflamed muscles. The root extracts are taken to treat sciatica, lumbago and related illnesses. The freshly extracted oil of the plant is used locally for skin diseases. Internally it is taken as a purgative. The local herb named *Aerva javanica* (Arabic name noqd) is given for all types of fevers especially malaria and chest infections. The local healers use the above mentioned drugs, and a lot more, as a broad spectrum to cure many illnesses, no specific drugs are prescribed for a particular ailment. Therefore, it is essential that a full investigation and evaluation of these drugs is made. It is possible that many toxic effects may be associated with some of these drugs therefore chemical assays may be employed to identify the factors responsible.

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