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**The use of herbs in Yemeni healing practices:
An interdisciplinary workshop on traditional knowledge
and cultural concepts in scientific perspective**

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ABSTRACTS

Traditional farmers' knowledge of plant uses as the key point for preservation of biodiversity in the high mountain areas of Yemen

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This paper will discuss the value of local traditional knowledge in support of land conservation and in uses of plant and crop diversity, as a main factor for maintaining agricultural production and livelihoods of the population in the high mountains of the Republic of Yemen.

In Yemen we find two agricultural systems: the first one is farming within an intensified agricultural system, which is totally dependent on irrigation and regular imports of seeds, fertilizers, and pesticides.

The second system relies on rainwater and use of local resources of seeds, organic fertilizers, agricultural tools and traditional practices in managing the production process, including protection against diseases and pests.

With regard to the second system, over long periods of time, farmers' knowledge has accumulated – along with increasing experience in selection and cultivation of suitable species and varieties that formed part of their respective agricultural system. The outcome was the successful provision of food and production of livestock, animal fodder, fibres for clothing materials, medicines and other daily life substances, as well as building materials. Since it meets the needs of local populations, this farming practice has continued and survived until today.

This is what is called agro-biodiversity: cultivated species and local landraces are farmed side-by-side, and may even interbreed. Agro-biodiversity has enormous values – environmental, social, functional, ecological, developmental, economic, ethical, aesthetic, recreational and scientific. It contributes to preserving the soil, saving water (because of drought-resistance of the landraces), and protection from desertification.

There is a key link between local traditional knowledge and experience in Yemeni society and agricultural biodiversity.

The main vegetation types and the important values of plants in the Jabal Bura' protected area

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Vegetation was surveyed in the Wadi Rijaf districts, in the Jabal Bura' protected area, Yemen. The study was aimed at investigating the vegetation of one of a small number of locations in Yemen where unique plant species are known to occur. The study presents the first systematic vegetation survey of this area.

The transects were located from west to east across the main Wadi Rijaf. Horizontal lines, orthogonal to the main line, were made to cover the surrounding rocky slopes. Four to six 25m x 25m sample plots (squares) were laid out along these lines. The Braun-Blanquet approach was used for classification and data collection of the vegetation. The 51 survey plots in the Wadi Rijaf revealed 196 different plant species, of which 2 were Yemeni endemic species. A total of 147 genera belonging to 67 families were recorded from these plots.

Analysis of the vegetation in the Wadi Rijaf districts showed a floristically complex habitat unlike neighbouring NE African forest zones, with 10 floristic vegetation types. The majority of the plant species are widespread across tropical and southern Africa, and are of Sudanian-region (Paleotropical origin) elements.

The study has revealed the importance of this region in terms of plant biodiversity, and particularly of species valuable for economic use (e.g. medicinal, aromatic). The rare and endangered species urgently require further management and conservation activities.

The following endemic and near endemic taxa were found in the study sites: *Aloe yemenica*, *Plectranthus arabicus*, *Euphorbia ammak* and *Abrus botte*. About 32 plant species are used in traditional medicine, the most important ones are *Acalypha fruticosa*, *Aerva javanica*, *Aloe yemenica*, *Anisotes trisulcus*, *Aristolochia bracteolate*, *Blepharis edulis*, *Calotropis procera*, *Caralluma penicillata*, *Kleinia odora*, *Ocimum forskolei*, *Pergularia daemia*, *Psiadia punctulata*, *Ricinus communis*, *Rumex nervosus*, *Tribulus terrestris*, *Withania somnifera* and *Salvadora persica*.

The miraculous plant “Halka” (*Cyphostemma digitatum*) - from grandmother’s kitchen in Yemen’s south-western highlands to modern medicinal and culinary applications

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Halka (*Cyphostemma digitatum*) is a plant with a wide range of culinary and medicinal application found in Yemen’s south-western highlands. It provides a very attractive phenomenon for research, since this species is very toxic in nature, but has been treated by traditional processing methods to become an important constituent of many Yemeni dishes, in addition to its diverse medicinal applications. Our research was aimed at understanding the high level of bioactivity observed, framed by the general decline in the traditional knowledge of plant’s uses. It has been shown by modern lab methods that the plant contains large quantities of vitamins, carotenoids and other valuable substances; hence it could become a potential resource for improving public health and quality of life. Cultural aspects of the gathering, processing and application of *C. digitatum* were documented and seem to play a central role in understanding the plant’s situation. Meeting with old farmers and traditional healers in the rural areas allowed us to understand how essential the plant is for many dishes and medicinal applications. While in some regions the plant’s potential is completely unknown, immense demand and overexploitation of the species was observed in other regions. Hence, a second focus was to provide suggestions for sustainable cultural use and restoration in natural habitat through a characterisation of the ecological requirements of *C. digitatum* and predictions about its potential habitats. The species, as one of the most commonly gathered species from nature in all Arabia, could give good indications about the situation of ethnobotany in general in such a fragile environment.

From traditional medicinal plants of Yemen to therapeutic herbal drugs: the valorisation of natural resources, an applied ethnopharmacological program

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Traditional medicine in Yemen comprises medical beliefs and practices that are determined by epidemiological, cultural, historical and economic factors. One can distinguish several medical models: traditional healers specialized in classical Arabic medicines and traditional healers combining a simplified humoral tradition with magico-religious practices including those used by herbalists, bonesetters, traditional midwives, blood-letters and cautery practitioners, amulet writers and mystical healers. Interviews were conducted during two and a half years (1977-1979) in all parts of what was then North Yemen among traditional healers and self medicated people.

160 medicinal plants have been identified (22 % cultivated, 16 % imported, 62 % wild). The main therapeutical indications concern antimicrobial, analgesic, urologic and ophthalmic plants.

Investigation on the cultural background of therapeutical indications through the literature shows that 54 % have been mentioned in the Arabic medicine (Ibn al Baytar, XIII c), 44 % in Greek medicine (Dioscoride, 1 c), 22 % in Ayurvedic medicine (Caraka samhita II c); 36 % are original therapeutical indications from Yemenite knowledge.

The biodiversity is extraordinary, not from a quantitative point of view (1750 plants), but in the quality and genetic properties of some plants like frankincense (*Boswellia sacra*), aloe (*Aloe vera* which is the indigenous *Aloe barbadensis*) and coffee (*Coffea arabica*).

Others are also widely used all over the world like senna (*Cassia senna*) or henna (*Lawsonia inermis*), and qât (*Catha edulis*) as a stimulating plant.

Pharmacological investigations have been realised on two plants, *Crepis rueppellii* – traditionally used against hepatic disease; and *Anisotes trisulcus* – against kidney and gall bladder stones, and as a diuretic. Both plants stimulate bile production and present hepatoprotective properties against hepatitis induced by ethanol and carbone tetrachloride.

Several plants could be used to preapare phytodrugs for a local pharmaceutical market like *Plantago major* (antiallergic), *Tribulus terrestris* (aphrodisiac), *Trigonella foenum-graecum* (hypoglycemic), *Eucalyptus globulus* and *Thymus laevigatus* (antimicrobial), *Lavandula stoechas* (sedative).

The validity of traditional medicine as an effective tool in issues of human health

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Traditional knowledge is comparable to scientific knowledge in so far as it is based on cumulative observational evidence. It differs because of its historical and cultural dimensions: traditional knowledge is compiled and shaped over long periods of time, by many generations of people whose livelihoods depended to a large degree on this knowledge and its application. Typically, it is handed down through oral transmission from older to younger generations, and through shared practices. To consider it a thing of the past, however, inherited and blindly applied by a group of people, would be wrong; traditional knowledge is constantly being refined.

The World Health Organization defines traditional medicine as “the sum total of the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, whether explicable or not, used in the maintenance of health, as well as in the prevention, diagnosis, improvement or treatment of physical and mental illness”. While many substances applied in traditional medicine have a proven pharmaceutical effect on a medical condition based on their active agents, the healing powers of other practices are rather to be explained through the placebo effect, a known phenomenon in modern Western medicine as well.

This paper uses examples of traditional medicine from Yemen, both substances and practices, and explores their historical and cultural dimensions, as well as the validity of their uses in today’s society.

The Use of Agarwood in Yemen

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Agarwood was known in South Arabia already in pre-Islamic times, when it was imported and traded as one among other aromatic materials. Especially since the beginning of Islam this product has enjoyed many uses. Nowadays it counts as an important aromatic in everyday life in Islamic societies.

Yemen played a special role in spreading knowledge about, and the value of, natural resources and their pharmaceutical qualities in the Islamic world. Due to the country's geographical location and cultural history its population supported exchange between East and West.

Agarwood has been used by Yemenis in different ways. It is highly valued as a material of religious objects – e.g. in making rosaries – alike as an important substance in perfumery. It is used in the form of wooden sticks in incensation, as oil, and as a primary material to produce diverse refined perfumery products. The latter are highly esteemed in the frame of social festivities, as well as religious occasions, such as praying and funerals.

These ethnographic examples give evidence of the functions of agarwood. This wood, and more generally perfumes, have been highly valued for their purifying qualities, on the grounds of the recommendations given in the Hadith and in the general religious literature, as well as in the customs and ideals that we can observe in practical Islamic life.

Medieval Medicine and Pharmacology: Evidence from the Cairo Genizah

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The Cairo Genizah serves as an almost unlimited source of information about medieval Mediterranean society, in particular the Jewish community of Cairo for already more than a century. The hundred thousands of fragments it contains shedding light on numerous aspects of the social, economic and cultural life of the community and lately, on the community's medical aspects.

Out of the 150,000 found in the main Genizah collection – the Taylor-Schechter Collection at Cambridge – about 1800 deal with medical and health-related issues. Processing these fragments is an arduous task due to their age, poor state of preservation, the often difficult to decipher handwriting of those who penned them down and various linguistic aspects.

This paper aims to explore and present practical and theoretical medical aspects of the community; it is based on a study of about 1550 parts of medical and pharmaceutical books, 140 prescriptions, 70 lists of *materia medica*, 30 notebooks and few letters written by Jewish medical practitioners in Cairo.

A unique aspect of the information that emerges from the prescriptions is their originality. Unlike the information that comes from books or is usually copied from classical or contemporary medical sources, the prescriptions are clear-cut primary evidence of the medical uses of medicinal substances, of the medical conditions afflicting members of the community, and of the ways these were treated.

Eye diseases were the most prevalent ailments. Others were skin diseases, headaches, fevers, internal diseases (liver), intestinal complaints and hemorrhoids and many others such as urinary problems, ulcers, swellings, cough and gynecological illnesses.

The potential of Yemeni medicinal plants from a pharmaceutical point of view

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Natural compounds and their derivatives constitute a main part of drugs available in today's pharmaceutical market. More than 50 % of anticancer drugs have been isolated from natural sources, or are related to them. Almost all antibiotics are of natural origin. For several reasons, e.g. resistance development against known antibiotics or incurable diseases, the search for new drugs must be continued. The ethnopharmacological approach can be a promising way to identify new therapeutic agents for newer, safer and affordable medicines.

The use of traditional medicinal herbs at the primary health care level is widespread in Yemen. But only a few species from Yemeni natural sources have been scientifically investigated for their biological activity and for their chemical constituents. In the frame of our collaboration with the Universities in Sana'a and Aden our Yemeni colleagues have collected a lot of traditional medicinal plants from several Yemeni regions, including the island Soqatra. As well, their study has compiled the related knowledge about medical applications, preparations and mode of application. Extracts were screened for their biological activities in a broad spectrum of microbiological and cellular test systems. In this way a lot of plants and fungi with interesting biological activities could be identified. For selected extracts a bioactivity guided isolation process of the responsible bioactive compounds was done.

The lecture demonstrates the great potential of Yemeni medicinal plants and fungi for the development of new drugs.

Healthcare and healing methods in pre-Islamic Yemen

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We have some information about healthcare and illness in ancient Yemen from the Sabaean inscriptions. The purpose of this paper is to present an outline of the epigraphic evidence concerning illness and healing, and to examine some specific examples. After giving a brief presentation of different illnesses and epidemics that are mentioned in the inscriptions, this paper will concentrate on herbals that have been used in ancient Yemen. Old South Arabian inscriptions provide us some accurate data about pharmacopeia. Among the main medical plants in ancient Yemen are frankincense, myrrh and other aromatics. Further, significant data can be gained from the recently discovered Sabaean inscribed sticks, where herbs are mentioned in the use of medical plants such as *ṭm* "mustard seeds", *fqḥm* "chamomile (?)", *štm* "Moringa seeds", *mmt* "linseed" etc. The Yemeni *materia medica* has its own origins in this country and continues in use throughout history. For centuries, herbal curers existed in Yemen and possessed a solid pharmacopeia that continued traditionally until the modern times.

Aloes and frankincense: changing attitudes and uses in Southern Arabia (mainland Yemen, Soqatra and Dhufar)

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The paper will examine the attitudes towards these two groups of plants in Southern Arabia, and the very different uses to which they have been put. It will also look at contemporary usage of these plants.

Healing through medicinal plants: Old Yemeni therapeutic traditions applied in Jerusalem of today

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It is a known phenomenon in pre-modern traditional societies to heal illness, be it physical or mental, through natural products such as herbs, fruit or seeds in various concoctions. In the near-absence of western medicine, as was the case in Yemen until the middle of the 20th century, this was a recognized medical procedure.

We have reports that in Yemen, Jews were frequently accredited by non-Jews with special knowledge in healing methods. Such attribution of healing "secrets" or "powers" to a minority can also be observed in other societies, as the unknown "Other" becomes imbued with supernatural qualities.

In modern Israel of today, where conventional medicine is *de rigueur*, some of the Jews who immigrated from Yemen, and even second-generation Yemenites, still practice traditional healing methods using herbs of which some were imported from Yemen at the time of the immigration. Examples will be given.

When conventional medicine fails, such ways of procuring health are appreciated not only by the ones used to them, but also by others who follow the contemporary trend of alternative medicine.

Yemenite Jews who have conserved in Yemen ancient traditions for over two thousand years in relative isolation, are for that reason also believed to still know ancient healing methods.

Crossing borders: Knowledge and practice in transitional spaces

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Traffic in knowledge and practices has always been reciprocal, whether the time and place was ancient South Arabia or colonial India. Human beings are active agents in making knowledge their own and transforming practices to fit their situations. As recent work in the history of science has shown, knowledge has to become local to function as knowledge. In this paper, I give three brief examples to illustrate the reciprocal, transformative nature of cultural contact zones. First, I sketch the transformation of hermeticism into metaphysical religion as it moved across Europe and into North America. Secondly, I give an overview of the effort to understand the flora of India in relation to health within the British colonial system. Finally, I move closer to our own day and explore the development of psychoanalysis in India, as it was co-constructed by Indian psychologists and physicians to meet the demands of Indian, especially Bengali, culture. In each of these brief sections, I emphasize the negotiated quality of the transmission of knowledge and practice.

Honey, coffee and tea in the ritual and healing practices of Hadramawt

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The aim of this presentation is to use my Yemeni field data to discuss the symbolic roles of the above-mentioned triad. Honey has acknowledged qualities regarding its health-giving properties, supported by the Qur'an and medieval treatises. Honey fortifies, heals wounds, treats gastritis, ulcers, liver and kidneys disease, as well as diabetes; when taken with meat it is an aphrodisiac. It serves as a distraction for a child during circumcision; and as a good omen for the newly-weds. Local poetry equates honey with life and inspiration, in contrast to bitterness in an empty bee-hive which symbolizes death and tribal arrogance – one of the most ancient epic motives of Eurasia. Emigrants keep the honeycombs from Wadi Daw'an as a symbol of their native land.

Local Yemeni tradition connects coffee with the Sufi shaykh 'Ali al-Shadhili (d. 1418); it is said that the introduction of the beverage was one of his miracles. Coffee was extolled for its invigorating effect by local poets. Tea appeared in the Hadramawt only in the 1880s, introduced from the Hijaz. A dispute in verse between coffee and tea in an early 20th-century poem concludes that coffee is destined for elderly scholars, whereas tea is for the younger merchants engaged in pleasures of this life. Enthusiasts praise tea in Sufi terminology as the key of eternity, the honey of Paradise and the universal medicine. Tea-sets and samovars became a part of the dowry, a common gift for the wedding. In fact, tea changed the everyday life of the Hadramis.

Magic and Medicine in a 13th c. Treatise on the Science of the Stars. The *Kitāb al-Tabṣira fī 'ilm al-nujūm* of the Rasulid Sultan al-Ashraf 'Umar

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At the end of the 13th century the Rasulid Sultan al-Ashraf 'Umar (Yemen, d. 1296) compiled an exceptional treatise on the science of the stars, the *Kitāb al-Tabṣira fī 'ilm al-nujūm*. Two features mainly characterize this text, the social role of its author, and the selection of its topics. These topics also comprise magic, and medicine.

After providing some background information this talk will analyse the magical and medical information given in the *Tabṣira*. And it will show possible reasons to include them in a treatise on the science of the stars.

Qât, Sex and Traditional Healing

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There is a substantial corpus of analysis about *Catha edulis*, or *qât* in Arabic, both for Yemen and East Africa. Much of this focuses on the origin and distribution of the plant and its legality in an Islamic context; I have previously published articles on both these aspects of the plant's history. This talk will focus on the proposed medical benefits of *qât* chewing in traditional Yemeni culture, with a focus on the issue of sexual performance and libido. Although relatively late as an introduction into the medicinal and pharmacological literature, *qât* was placed within the existing humoral system. *Qât* was considered cold and dry, which explains why the recommended preparation for its use is eating a meal of 'hot' food like sorghum porridge or meat. Opinions differ about its impact on the libido. I examine relevant historical sources (including legal and medicinal texts), ethnographic accounts, poetry and contemporary scientific analysis of *Catha edulis* for this talk.