Food as medicine and medicine as food; nutritional plants in medical prescriptions in the notebook of a Tamang healer: *Ferula asa-fœtida* L. and *Curcuma longa* L. in traditional medical treatment and diet in Nepal

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INTRODUCTION

Food and eating have powerful symbolic value among the hinduistically-influenced ethnic groups of Nepal[1]. With food, the gods are worshipped, the ancestors sustained and through food the caste status is distinguished.

Similarly it is used to mark the main division in the spiritual hierarchy: higher spirits must be fed with ritually purer food; hence, many substances offered to the low spirits are considered unfit (impure) for the higher deities.

Food also plays a major role in the concepts of illness and curing[2]. In the humoral theory of the ayurvedic medical system the contrastive values of hot and cold are connected with the qualities attributed to different food articles. Therapeutic actions are maximally effective only if appropriate dietary measures are taken to support the restoration of physiological balance[3].

Furthermore, food and spices themselves constitute an integral part of traditional medical prescriptions. A notebook of a deceased Tamang shaman from the eastern hills in Nepal, received during a field trip in 1986[4], consists of thirty five magic formulas and sixteen prescriptions[5] based mainly on plant material. Of the twenty five plants used in the prescriptions, the following eight are also part of the common daily diet in Nepal: *Curcuma longa* L., *Ferula asa-fœtida* L., *Zanthoxylum armatum* DC., *Psidium guajava* L., *Sesamum indicum* L., Rice, *Citrus aurantifolia* (Christ.) Swingle and *Artemisia vulgaris* L. Honey and the spice *Battis masala* (a mixture consisting of thirty two ingredients) are also used. These traditional prescriptions use minute amounts of materials that are consumed daily in much higher quantities. Why? What are the additional benefits?

Using *Curcuma longa* and *Ferula asa-fœtida* as examples, an attempt is made to address this issue.

CURCUMA LONGA L.

It is a perennial herb that measures up to one meter high with a short stem and tufted leaves[6]. The parts used are the rhizomes, which are ovate, oblong, pyriform or cylindrical and often short branched. They are yellow to yellowish-brown in color.

CHEMICAL CONSTITUENTS

Moisture 13.1%; protein 6.3%; fat 5.1%; mineral matter 3.5%; carbohydrates 69.4%. The essential oil (5.8%), obtainable by steam distillation of the rhizomes, has the following constituents: α-phenandren 1%, sabinene 0.6%, cineol 1%, borneol 0.5%, zingiberene 25% and sesquiterpenes 53%. Curcumin (3-4%) is responsible for the yellow color. In addition, the monodemethoxy and bisdemethoxy derivatives of curcumin have been isolated from the rhizome[5].

MEDICINAL USE

The rhizome is a household remedy in Nepal. The powdered rhizome is considered to be stimulating, carminative, purifying, antiinflammatory and anthelmintic. Externally the rhizome mixed with alum is also applied as a paste to wounds, bruises, inflammatory troubles of the joint, and sprains[5]. Current traditional Indian medicine uses it against biliary disorders, anorexia, cough, diabetic wounds, hepatic disorders, rheumatism and sinusitis —when translated into terms of modern medicine[7].

PHARMACOLOGICALACTION

Turmeric powder applied over septic or aseptic wounds in rats and rabbits accelerates the healing process. Extracts exhibit anti-inflammatory activity after parenteral application in standard animal models. Curcumin and the essential oil are mainly responsible for these actions. Both cause increased bile secretion in dogs. *Curcuma longa* has been advocated

Actes du 2e Colloque Européen d'Ethnopharmacologie et de la 11e Conférence internationale d'Ethnomédecine, Heidelberg, 24-27 mars 1993.

for use in liver disorders, but evidence for an effect in humans is not yet available. Systemic effects are questionable after oral administration due to low absorption. This does not exclude a local action in the gastrointestinal tract[8].

USE IN THE NOTEBOOK

Curcuma longa is part of two recipes: one for purification of the blood, the other against menstrual and abdominal problems. In the first one it is mixed with resin of *Psidium guajava*, with *Bergenia ligulata*, honey, *Sesamum indicum* and an unknown resin, which has had to be wrapped around a cow. Everything is mixed together and eaten. In the second recipe a mixture is prepared from *Curcuma longa*, *Orchis incarnata*, *battis masala* (a mixture of 32 spices), honey, *Citrus aurantifolia*, *Sesamum indicum* and *shellac*. Again everything is mixed together, put at the inner and outer side of the hand of the patient, from where she eats it[5].

Doses: each freshly prepared mixture contains around 0.5 g. It is administered only once daily[9].

DIETARY USE

Turmeric is one of the most widely used spices in Nepali cooking. Vast quantities go into curries and give them their brillant yellow color. It is also an important spice in *dal*, the most frequently eaten dish of rural Nepal. A typical *dal* recipe consists of: 2 cups of *dal*, 5 cups water, 2 teaspoons turmeric, 5 drops *Asa-fœtida* water, 1 teaspoon black pepper, 1 teaspoon black cumin seeds, 309 fresh ginger, 1/2 cup of *ghee*, 1 big onion, 2 teaspoons chopped coriander leaves, 2 green chillies, and salt to taste. The *dal* is washed and soaked for 15 minutes. Chopped onion and ginger are fried in *ghee* until light brown, cumin seeds are than added and the mixture fried for an additional minute. *Dal*, turmeric and salt are added to boiling water followed by cooking on low fire. When the *dal* is nearly cooked, fried onion, ginger, cumin seeds, chopped coriander leaves, green chillies and black pepper are added and all is cooked for 5 minutes.It is served with rice. The daily serving per person contains around 0.5 to 1.5 g turmeric[9].

FERULA ASA-FŒTIDA L.

This plant grows wild in Kashmir, Iran and Afghanistan. It has an unpleasant smell, is herbaceous and perennial and grows up to two meters high[6]. The part used is a oleogum resin, obtained by incision from the root, and called *Asa-fœtida*[6].

CHEMICAL CONSTITUENTS

Glucuronic acid, galactose, arabinose and rhamnose have been isolated from the gum[4]. Taste and smell are due to sulfur containing compounds. Disulfides as well as symetric tri-and tetrasulfides have been isolated[5]. Umbelliferone, the farnesiferoles A, B and C, ferulic acid, and the cumarin derivatives foetidin and kamolonol are also present[5].

MEDICINAL USE

In Nepal *Asa-fœtida* is considered to be sedative, carminative, antispasmodic, diuretic,and anthelmintic, as well as emmenagogue and an expectorant. It is an aphrodisiac, and increases the sexual appetite[5]. Daily dose is around 0.2-0.5 g[9].

PHARMACOLOGICAL ACTION

Asa-fœtida has not been studied much. It produces slight inhibition of the growth of *Staphylococcus aureus* and *Shigella sonnei*, and some of the sulfur compounds show pesticidal activity. Higher doses taken orally cause diarrhoea, meteorism, headaches, dizziness and enhanced libido[6].

USE IN THE NOTEBOOK

Asa-fœtida is part of a formula against witchcraft. "If a witch sucks (leaving a blue bruise or stain) on some part of the body the following four things should be applied without speaking: wood of *Maclura cochinchinensis*, of *Solanum torvum* and *Smilax lanceafolia*, and *Asa-fœtida*. These things are mixed and rubbed on a rock to produce the paste for application."[5].

DIETARY USE

Asa-fœtida has been commonly used in Nepal for many centuries, especially in minute amounts as powder or as *Asa-fœtida* water, as a flavouring agent in many curries or lentil preparations. *Asa-fœtida* water is prepared by mixing one teaspoon ground spice into one cup of hot water. A typical recipe is described in the *Curcuma longa* section. In general, around 50-200 mg twice a week are consumed per person[9].

DISCUSSION

The data presented here show, that turmeric and *asa-fœtida* are consumed regularly in the everyday Nepali diet. Both spices are also popular household remedies and components of many prescriptions used in traditional healing. The pharmacology of turmeric and its main chemical constituents have been studied quite carefully, indicating the effectiveness of this drug also in terms of "western medicine"[10]. *Asa-fœtida* has been studied less than turmeric, but it seems likely, that its beneficial effects can also be pharmacologically rationalized.

In traditional treatment *Asa-fœtida* is consumed in amounts comparable to those in the daily diet. The daily intake of turmeric from curries and dal is much higher than during a treatment. In addition the remedies are taken only once a day for one to four days. Therefore, there must be different factors (*i.e.* other than the strictly "pharmacological" ones) at work.

We offer the following hypotheses hoping to give some new insights into the complex relationship between food, spices and medicinal plants in indigenous medical prescriptions:

1. THE AYURVEDIC HYPOTHESIS

In the ancient Indian ayurvedic system disease is thought to result from imbalances between the Tridoshas Vata, Pitta and Kapha of an individual[6]. Food and medicine carry the qualities of hot, cold and neutral[11]. These qualities influence the above mentioned imbalance. Unmodified spices and medicinal herbs are generally considered as hot or cold[11].

The village medical practitioners in general and, even more so, their patients have only rudimentary knowledge of the complex theories of the ayurvedic treatment. They maintain, however, a number of related ideas about the required diet in accord with this food classification system[12]. Food is thought to enhance and facilitate the actions of medicines and to provide means for balancing their extreme qualities.

By adding spices (or food) to prescriptions, the healer is thus able to regulate the quality of the remedy for the necessary individual treatment.

2. THE BIOAVAILABILITY ENHANCER HYPOTHESIS

In ayurveda, black pepper (*Piper nigrum* Linn.), long pepper (*Piper longum* Linn.) and ginger (*Zingiber officinale* Rosc.) are collectively termed *Trikatu*, and are essential ingredients of numerous prescriptions, used for a wide range of disorders. Use of the same herbs for different ailments is intriguing unless they possess some unique activity that is useful in multidrug combinations. Several studies have now shown, that *Trikatu* possesses bioavailability enhancing effects[13].

Curcuma longa is related to ginger. Both belong to the *Zingiberaceæ* and contain compounds, which are quite similar from a chemical point of view. (Turmeric: the curcumin group, ginger: the gingerol, gingerdiol group[14]). Therefore, it seems likely, that turmeric has a similar enhancer activity, which makes it a very useful additive to medical prescriptions.

Whether enhancement of bioavailability is a general effect of hot spices or not, is still an open question.

3. THE PSYCHO-DYNAMIC INTERACTION HYPOTHESIS

The distinction between naturally-caused illness and illness in which evil spirits play an essential role is an important concept in traditional medicine in Nepal[15]. Spirits attack man because they are hungry. Correspondingly, most curing ceremonies involve ritual feeding.

The jhākri or shaman (a specialist for the treatment of evil spirit-caused illnesses) also applies herbal remedies (*e.g.* as described in the note book), but always combined with ritual actions and the recitation of magic words. Psycho-dynamic interactions occur between shaman and patient[2]. Due to the ritual and social importance of food and the strong connection between well-being and food, it may be necessary for the healer (the patient generally does not know the ingredients of the preparation given to him during treatment), to have at least some amount of "good food" *e.g. ghee*, honey, turmeric or *Asa-fœtida* in his remedy. In that way he feels more confident about its power. This additional security could be carried over to the patient.

We believe, that the relevance of these three hypothesis varies from case to case. They all contribute to the explanation of why food and spices are so often a part of traditional medical prescriptions.

"In fact, Asian cuisine is characterized by the adaptation of irritants. Consider for example, the importance of ginger, garlic, red onions, tamarind, turmeric and chili in both the medicinal and the culinary traditions of Asia. The issue is not, whether they are foods or medicines, but rather that they are all part of the same system, which strengthens and refreshes the body[16]."

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