

## CONTINUING MEDICAL EDUCATION

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### CONDIMENTS AS A CAUSE OF CONTACT DERMATITIS

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A few years ago, Sinha et al<sup>1</sup> working at the AIIMS, New Delhi described contact dermatitis commonly occurring on the tips of the thumb, index and middle fingers of one or both hands of housewives who cook food for their families. This dermatitis was attributed to the juices of raw vegetables coming in contact with the fingers as the patient would peel or slice the vegetables. Patch tests with various vegetables revealed garlic, onion, tomato and carrot to be the commonest offenders, although less commonly almost any other vegetable could be responsible.

Subsequent studies<sup>2</sup> confirmed that garlic and onion are the two most common causes of this type of contact dermatitis in India, but it was realised that a similar clinical picture of contact dermatitis can also be produced by contact hypersensitivity to fruits or salads even if the individual does not cook vegetables.<sup>3</sup> Still another group of agents to which these patients are exposed during cooking, is the condiments about which there is almost no information from India, even though condiments are used in almost every household throughout the length and the breadth of the country. A brief review of the information available so far follows :

**Cinnamon (english), Dalchini (hindi, gujarathi, marathi, beengali and telugu), Ilayangam (tamil).**

Cinnamon is the bark of an ever-green shrub/small tree (*Cinnamomum zeylanicum*). It is cultivated mostly in Kerala and Tamil Nadu.<sup>4</sup>

The tree consists of coriaceous aromatic leaves, numerous inconspicuous flowers and blackish berries. Its flavour is due to the oil of cinnamon which contains cinnamic aldehyde and eugenol. The content of cinnamic aldehyde is more in the bark oil than the leaf oil.<sup>5</sup> The bark as small pieces or its powder is extensively used as a condiment for preparing various foods. It is also used for flavouring tooth-pastes, chewing-gum, tobacco, cola beverages and perfumes. It has been recorded to produce contact dermatitis of the hands on both the palmar and the dorsal surfaces in cooks, bakers, grocers and confectioners.<sup>6</sup> Miller<sup>7</sup> recorded positive patch test with cinnamon in a woman, who developed cheilitis after getting exposed to the vapour of cinnamon oil, present in the bubble-gum. Fisher<sup>8</sup> described chronic dermatitis on the hand of a baker who was found to be sensitive to cinnamon and in whom the symptoms disappeared on avoiding contact with cinnamon. Subsequently, the baker developed stomatitis and cheilitis from a tooth-paste containing cinnamic aldehyde, and a widespread dermatitis after using a sunscreen containing cinnamon. Magnusson and Wilkinson<sup>9</sup> reported 16 cases from Sweden and Britain having stomatitis due to the oil of cinnamon added as a flavouring agent to a new tooth-paste. Contact hypersensitivity to cinnamic aldehyde used in tooth-paste, has been reported by other workers as well.<sup>10-14</sup>

Cinnamon when used by the pharmaceutical chemists<sup>15</sup> and in the deodorant industry<sup>16</sup> can cause contact dermatitis on the tips of fingers and the dorsal aspects of both the hands. Goodman<sup>17</sup> recorded acute dermatitis involving the nape of neck, face, dorsal surface of hands and

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thighs in a woman who had applied a cinnamon-containing sunscreen and exposed herself to the mid-day summer sunlight. Closed patch test with cinnamon was negative, while a photopatch test with cinnamon produced a positive reaction. Cronin<sup>18</sup> also recorded contact dermatitis due to another sunscreen also containing cinnamon. Cinnamic aldehyde used in the perfumes has been recorded to produce dermatitis in the axillae and around the neck.<sup>19</sup>

Contact dermatitis due to cinnamon may flare up following ingestion of cola beverages and candy containing cinnamic aldehyde. It may result in severe eczematous eruptions, urticaria<sup>2</sup> and pompholyx.<sup>5</sup> However, in India contact dermatitis due to cinnamon has not been recorded so far.

**Coriander (english), Dhania (hindi), Dhane (bengali), Dhanna (marathi), Kothamalli (tamil), Dhaniyalu (telugu), Kothuupalari (malayalam).**

Coriander seeds are the dried fruits of the herb, *Coriandrum sativum*, which is most commonly cultivated in Andhra Pradesh, Tamil Nadu, Maharashtra and Punjab.<sup>4</sup> The seeds are yellowish brown and have a pleasant aromatic taste. The coriander leaves are a rich source of vitamin C and carotene.<sup>20</sup> Coriander oil, a colourless, pale yellow liquid, is obtained from coriander seeds and it has the characteristic odour and taste of coriander. The chief constituent of coriander oil is coriandrol, a terpene tertiary alcohol.

The coriander leaves and twigs are used for preparing chutneys and sauces. The leaves as well as seeds are used for flavouring the soups, curries and vegetarian foods. The seeds are also used for flavouring pastries, cakes and tobacco products. In south Indian states, the seeds are chewed as a remedy for foul breath. It is a carminative and a diuretic. The coriander oil is used as a flavouring agent in cocoa and chocolate industries. The residue left after extraction of the volatile oil has been used as a fodder for the animals.

Loveman<sup>21</sup> recorded a positive patch test reaction to coriander oil in a patient having stomatitis. Contact dermatitis due to coriander has not been recorded so far except that out of 53 patients having contact dermatitis on their finger tips, one patient showed a positive patch test reaction with coriander.<sup>1</sup>

**Cloves (english), Loung (hindi), Lobongo (bengali), Lavangamu (Telugu).**

Cloves (*Eugenia caryophyllata*) are the unopened flower-buds of a small, conical evergreen tree. In the wild state, the tree produces clusters of crimson flowers, but in cultivation it is never allowed to reach the flowering stage. The fresh buds are green or red and become brown and brittle on drying. It is cultivated mostly in Kerala and Tamil Nadu.<sup>4</sup>

The clove oil is rich in essential oils, particularly eugenol. It is used in perfumes, soaps, tooth-pastes and mouth-washes. It is also used in the dental preparations such as impression pastes, surgical packings and dental cements. In India, cloves are also used for flavouring betel-nut fragments which are chewed as a post-meal carminative. The French people use them with onion soup. The Americans use it with pork.<sup>23</sup>

Gaul<sup>22</sup> recorded contact hypersensitivity to cloves in a man who had vesicular dermatitis affecting the hands, forearms, face and neck. The dermatitis occurred after application of an anti-pain liniment for his stiff neck. The anti-pain liniment consisted of clove oil, oil of wintergreen, synthetic mustard oil and cajeput oil. Stomatitis venenata and allergic eczematous eruptions due to cloves have also been described in dental personnel who come in contact with dental preparations such as dental cement and impression pastes.<sup>23</sup> The mucilage of postage stamps also contains clove oil as a preservative, and glossitis has been reported in persons who lick the stamps for pasting.<sup>23</sup> Contact dermatitis due to cloves has not been recorded in India, though cases of contact dermatitis due to the tooth-pastes are well-known.

Eugenol, a rich component of clove oil is also present in cinnamon oil and the oil of bay. Hence cross reactions may be seen with cinnamon oil and balsam of Peru.<sup>23</sup>

**Cumin seeds (english), Zeera (hindi and bengali), Jiregire (marathi), Jorekam (malayalam), Jilakara (telugu).**

Cumin seeds are obtained from a small slender herb, *Cuminum cyminum* which is cultivated in all the Indian states except Assam, Kerala and West Bengal.<sup>4</sup> The seeds are actually the dried fruits and are yellowish brown in colour. Cumin seeds are essential ingredients in all mixed spices, and curry powders. These are used to flavour vegetable foods, soups, pickles, cheese and in seasoning the bread and cakes. These are also used as a carminative. These contain an essential oil the principal component of which is cumin aldehyde. The oil is used in perfumes and for flavouring liqueurs.

Contact dermatitis due to cumin seeds has not been reported so far.

**Fennel (english), Saunf (hindi), Mauri (bengali), Shepu (marathi), Shombu (tamil), Jirakam (malayalam), Sopu (telugu).**

Fennel (*Foeniculum vulgare*) is a perennial herb of the family *Apiaceae*. It is cultivated mostly as a garden or a homeyard crop throughout India, but especially in Maharashtra, Gujarat and Karnataka.<sup>4</sup> The Lucknow seeds are known to be the best. All parts of the plant are aromatic.

The leaves are used in fish sauce and garnishing. The leaf stalks are used in salad. The roots are regarded as purgative.<sup>24</sup> The seeds are eaten as such and also with betel leaves as a carminative. These are also used for flavouring soups, meat dishes, sauces, pickles, bread rolls, pastries and confectionery. Fennel is a constituent of liquorice powder and other preparations used for allaying griping. The extract made by boiling the seeds in water, is employed as enema for infants for the expulsion of flatus. A hot infusion of the fruits is used as an indigenous

medicine to increase lacteal secretion and to stimulate sweating.<sup>24</sup> Oil of fennel is obtained by the steam distillation of crushed fruits. The main constituent of the oil is anethole. The oil is used as a flavouring agent in culinary preparations, confectionery, cordials and liqueurs.

Tulipan<sup>25</sup> recorded contact dermatitis caused by cosmetics containing the oil of fennel. Ingestion of fennel and sausages containing fennel seeds have been implicated as causative agents in bronchial asthma.<sup>26</sup> Fennel tea infusions applied to inflamed skin increased the inflammation.<sup>27</sup> Contact dermatitis due to fennel seeds has not been recorded so far.

**Cardamom (english), Elaichi (hindi and bengali), Veldode (marathi), Yelakkai (tamil) Yelakulu (telugu).**

Cardamom is of two varieties. The small cardamom, which is called *chhoti elaichi* in the local language, is the true cardamom. It is the dried fruit of *Elettaria cardamomum*. It is mostly cultivated in Kerala, Karnataka and Tamil Nadu.<sup>4</sup> The part of the western Ghat's range in Kerala where cardamom grows in abundance is named after the cardamom as cardamom hills. The region produces predominantly cardamom, though tea, coffee, teak and bamboo are also cultivated to some extent. The whole fruit is a three-sided oval capsule containing 15 to 20 dark red-brown or black, hard, angular seeds. The seeds have a slightly pungent, but highly aromatic flavour. These are used as condiments in various food preparations, sweet-meats and betel leaf in India. These are also used for flavouring cakes, bread and liqueurs. Several Indians keep cardamom fruits in the mouth as a flavouring agent and to counteract foul breath.

The other variety of cardamom, which is called *badee elaichi* in the local language, is not a true cardamom. It belongs to the genus *Amomum*. It is a cheaper substitute for the true cardamom. The fruits are slightly bigger than the true cardamom and are used in various food

preparations in India. In addition, it is also used as a purgative.

Mobacken and Fregert<sup>28</sup> recorded contact dermatitis due to true cardamom seeds in a confectioner with chronic hand dermatitis. Niinimäki<sup>29</sup> recorded positive patch test reactions to true cardamom in 4 cases in a series of 338 patients having different dermatological problems namely atopic dermatitis, contact dermatitis, microbial eczema, chronic non-specific dermatitis, leg ulcers, drug eruptions, neurodermatitis, psoriasis, nummular eczema, asteatotic pruritus, peri-oral dermatitis, stomatitis and impetigo. However, in India contact dermatitis due to small (true) cardamom has not been recorded.

Contact hypersensitivity to large cardamom has not been recorded anywhere so far.

**Asafoetida (english), Heeng (hindi, bengali, marathi and kannada), Perungagam (tamil and malayalam), Inguva (telugu).**

Asafoetida is the gum-resin obtained from the living root stocks or tap roots of *Ferula asafoetida*.

It is acrid and bitter in taste and has a strong alliaceous odour. It contains chiefly asaresinotannol, either in free form or combined with ferulic acid. It is relished as a condiment in India and Iran. In India, it is used for flavouring curries, sauces and pickles. The oil of asafoetida is obtained by steam distillation of the gum-resin. It contains chiefly secondary butyl propenyl disulphide. The oil has not attained any commercial importance.

Contact dermatitis due to asafoetida has not been reported so far.

**Indian cassia (english), Tej Patta (hindi and bengali), Talisha pattiri (tamil) and Brinji Ela (telugu).**

Indian cassia (*Cinnamomum tamala*) is an ever-green tree distributed mainly in the Himalayas, predominantly at the foot of Sikkim Himalayas. Most of the plantations are self perpetuating, while a few are planted and

cultivated. The leaves are ready for harvesting when the trees are 10-year-old, and each tree may live for almost a century. The leaves are extensively used in vegetarian and non-vegetarian foods throughout India. In Kashmir, it is used as a substitute for betel leaves. It is used as a carminative and also for colic and diarrhoea.

Contact dermatitis due to Indian cassia has not been recorded so far.

**Mustard (english), Sarson (hindi and bengali), Avalu (telugu), Karupakatuka (malayalam).**

Mustard (*Brassica juncea*) seeds are obtained from an annual herb, which has long branches with small yellow flowers. It is cultivated throughout India but predominantly in Punjab, Uttar Pradesh, Rajasthan and Assam.<sup>30</sup> The plant contains furocoumarins which may produce phytophotodermatitis.<sup>31</sup> The mustard oil because of its irritance was employed as tear gas in the first world war.<sup>32</sup> Mustard oil contains strong thioglucosides, which are used in minute quantities as condiments and in large quantities as counter irritants to the skin.<sup>33</sup> In India, mustard oil is used mainly for cooking purposes. It is also used for massaging the skin (oil baths) and hair and is believed to keep the skin healthy. Mustard oil has a weak antifungal activity.

According to Piffard,<sup>34</sup> Popham described deep red blotches resembling burns on the nose, forehead and dorsae of hands and feet in people who ate large quantities of mustard plant during an irish famine. Gaul<sup>22</sup> recorded contact dermatitis due to mustard oil in a man, who applied household liniment which contained mustard oil, clove oil and cajeput oil. Pasricha et al<sup>35</sup> recorded contact dermatitis in 2 female patients due to mustard khal, which is the residue of mustard seeds after the oil has been extracted out. The dermatitis occurred predominantly on the hands and forearms.

**Chillies (english), Lal mirch (hindi), Lanka mirch (bengali), Mulaku (malayalam), Mirapakaya (telugu).**

Chillies are obtained from the fruits of various species of capsicum, chiefly *Capsicum annum*. These are extensively cultivated throughout India but mostly in Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu.<sup>4</sup> These have a high pungency, the pungent principle being capsaicin which causes the burning taste.<sup>36</sup> The pungent character is retained even in as high a dilution as 1 in one million parts of water and even after cooking. Chillies are used as spices for making vegetarian and non-vegetarian foods, pickles and curry powders throughout India. The essential oils of chillies irritate the skin and mucous membranes of the respiratory passages and eyes. Its oleoresin which contains capsaicin, is an efficient lacrimator and is used as tear gas.<sup>23</sup> It is also used for the treatment of lumbago and muscular sprains, along with mephensin and methyl nicotinate.<sup>37</sup> Relaxyl ointment contains all the three above mentioned ingredients. High intake of chillies has been implicated as one of the causes of submucous fibrosis.

Contact dermatitis due to capsicum has been recorded in individuals who use liqueurs flavoured with capsicum.<sup>38</sup> Fisher<sup>23</sup> recorded an acute eczematous dermatitis on one side of the neck in a patient after playful spraying at a new year's party, of an aerosol which contained capsicum oleoresin. The patient had previously applied a rubefacient which contained capsicum oleoresin, camphor, turpentine oil and cajeput oil one year before this. Patch tests revealed a 4+ reaction to the capsicum, while the reaction to all other ingredients was negative. On two later occasions, dermatitis of the neck flared up after ingestion of capsicum-flavoured pickles.

In India, contact dermatitis due to chillies has not been recorded till date.

**Turmeric (english), Haldi (hindi, bengali and marathi), Manjal (tamil and malayalam), Pasupu (telugu).**

Turmeric is obtained from the perennial herb, *Curcuma longa*. In India, it is mainly

cultivated in Andhra Pradesh, Tamil Nadu, Orissa, Maharashtra, Bihar, Karnataka and Assam.<sup>39</sup> The characteristic yellow matter is distributed throughout the herb, but it is concentrated in the rhizomes. The chief content of the yellow matter is curcumin which belongs to the dicimomoyl methane group.

Turmeric is an auspicious article in all religious observations in Hindu families. It is a constituent of pickles and curry powders and is used for making almost all vegetarian and non-vegetarian dishes. It is also used for dyeing wool and silk. It is used as a colouring matter in pharmacy, confectionery and food industry. It is used as a household remedy for the treatment of common colds after mixing it with warm milk, and also for local applications on wounds and pyodermic lesions in association with mustard oil.

The essential oil obtained by steam distillation of dry rhizomes contains d-alpha-phellandrene, zingiberene and turmerones. It has feeble antiseptic properties. It is also used as an antacid, carminative, appetiser and anti-spasmodic.<sup>40</sup>

Contact dermatitis due to turmeric powder has not been reported so far; though the turmeric oil has been reported to cause irritant dermatitis.<sup>41</sup>

**Tamarind (english), Imlee (hindi), Tetool (bengali), Puli(malayalam), Chintapandu (telugu).**

Tamarind is obtained from an ever-green tree, *Tamarindus indicus*. It is planted mainly on the road-sides throughout the plains of India. The fruit is a plump pod. It contains 1 to 12 large, flat seeds embedded in a soft brownish pulp which has a sour taste. The raw fruit is used to make pickles. Tamarind is obtained after drying the pulp of ripe fruits. It is used as a souring agent in many food preparations and beverages.

Contact dermatitis due to tamarind pulp has not been reported so far, though Circla et

al<sup>42</sup> reported dermatitis caused by tamarind seed powder.

**Dried mango powder (english), Amchoor (hindi and bengali).**

Dried mango powder is made from the pulp of unripe mango fruit. The mango pulp is cut into slices and dried in the sun. After drying, the slices are ground into a powder. It is used as a souring agent for soups, chutneys and curries, and is commonly used in Indian foods. Mango is grown in almost all parts of India but especially in Uttar Pradesh, Bihar and West Bengal.<sup>43</sup>

The allergenic component urushiol in the mango tree (*Mangifera indica*) is present mainly in the rind of the fruit, but its leaves and stem also contain the allergen.<sup>44</sup> The mango dermatitis most commonly occurs from peeling and eating the unripe fruit.<sup>45</sup> It produces erythema, swelling and vesicles on the lips, around the mouth and the chin. Though the peri-oral skin is commonly affected, dissemination to other parts of the body can occur by the contaminated fingers. Sometimes, the dermatitic reaction is very severe and it may be associated with severe acute gastro-intestinal symptoms,<sup>46</sup> urticaria or shock.<sup>8</sup> Dang and Bell<sup>47</sup> reported serious anaphylactic reaction following ingestion of mango rind.

**Ginger (english), Adarak (hindi), Ada (bengali), Ale (marathi), Inji (malayalam and tamil), Allamu (telugu).**

Ginger is the rhizome (underground stem) of the perennial herb, *Gingiber officinale*. The rhizomes are irregular in shape and branched. This is widely cultivated throughout India, but especially in Kerala. The rhizomes contain potassium oxalate and an oil containing camphene, phellandrene, cineol, citral, borneol and zingiberene. The dried rhizome is commonly used to flavour bread, sauces and pickles. The fresh rhizome is used in cooking vegetarian and non-vegetarian foods. It is also eaten raw

with salads. It is a good carminative and thus useful in cases having flatulence and colic.

Behl<sup>48</sup> stated that dermatitis can occur on the hands due to excessive handling of macerated ginger. In a series of 53 patients having contact dermatitis on their finger tips, Sinha et al<sup>1</sup> recorded positive patch test reactions with ginger in 6 cases. Niinimaki<sup>29</sup> also recorded positive patch test reactions in 7 cases in his series of 338 patients.

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