# Botanicals and Contact Allergy

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## Botanicals
- **plant extracts**
- **essential oils**
- **increasingly popular additives**
  - cosmetics
  - cosmeceuticals
  - personal care products
  - aromatherapy
  - massage therapy
- **medicinal/healing properties**
- **fragrances**

## Botanicals - composition
- **highly variable**
- **dependent on plant part**
  - leaf
  - root
  - fruit
  - stem
  - flower

## Botanicals - composition
- **highly variable**
- **concentration, antigenicity can differ**
  - timing of harvest
  - Where the plant was grown
  - processing of plant

## Botanicals and Adverse Events
- **patients increasingly using them**
- **felt to be Natural and therefore harmless**
- **patients may neglect to mention usage**
- **need to ask**
Botanicals and Adverse Events

- Irritant contact dermatitis
- Allergic contact dermatitis
- Photocontact dermatitis
- Contact urticaria
- Pigmentation abnormalities
- Acneiform eruptions

Botanicals and Phototoxicity

- Balsam of Peru
- Carotene
- Cinnamic aldehyde
- Essential oils
- Furocoumarins
- Oak moss


Botanicals and Contact Urticaria

- Balsam of Peru
- Benzoic acid
- Camphor
- Capsicum
- Caraway oil
- Cinnamic acid, alcohol, aldehyde
- Coumarin
- Henna
- Ethyl vanilla
- Eugenol

Botanicals and Pigmentation

- Red discoloration by terpenes
  - Lemon, lime, orange, juniper
- Postinflammatory depigmentation
  - Cinnamic alcohol
- Postinflammatory hyperpigmentation
  - Benzyl alcohol
  - Benzyl salicylate
  - Cananga oil
  - Cinnamic alcohol
  - Geraniol


Botanicals and Acneiform Eruptions

- Cocoa butter
- Coconut oil
- Corn oil
- Linseed oil
- Olive oil
- Peanut oil
- Pine tar
- Sesame oil


Botanical Allergy Location

<table>
<thead>
<tr>
<th>Location</th>
<th>Frequency</th>
<th>Simpson</th>
<th>Thomson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Axilla</td>
<td>14.3%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Extremities</td>
<td>50%</td>
<td></td>
<td>21%</td>
</tr>
<tr>
<td>Face/Neck</td>
<td>21.4%</td>
<td>41%</td>
<td></td>
</tr>
<tr>
<td>Trunk</td>
<td>21.4%</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>Genitalia</td>
<td>14.3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Generalized</td>
<td>7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposed</td>
<td>14%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hand</td>
<td>14%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Botanicals and Contact Allergy

Tea Tree oil
- extracted oil from *Melaleuca alternifolia* shrub in Australia
- increasing popularity, increased ACD
- antimicrobial - bacteria, virus, fungi
- anti-inflammatory effects
- most allergenic botanical extract

Tea Tree Oil - increasing usage
- cosmetic products
- household products
- massage oils
- aromatherapy products
- mouthwashes
- moisturizing creams

Tea Tree Oil - adverse effects
- allergic contact dermatitis
- occupational contact dermatitis
- irritant contact dermatitis
- systemic contact dermatitis
- erythema multiforme - like reaction

Tea Tree oil
- Allergens
  - d-limonene
  - alpha-terpinene
  - terpinen-4-ol
  - Terpinolene
  - 1,8 cineole

Propolis
- occupational allergen in beekeepers
- "bee glue"
  - collected by bees from poplar and conifer buds
- used in cosmetics and medicinal products
- not the same as beeswax
  - secreted by bees
- antiseptic, anti-inflammatory, anesthetic
- wound healing, ulcer care
Propolis
- composition varies
- 180-300 components
- main allergens
  - LB-1 (3isomeric pentenyl caffeates)
  - 3-methyl-2-butenyl caffeate
  - Phenylethyl caffeate
  - Benzyl salicylate
  - Benzyl cinnamate

Propolis as Allergen
- 1.2 – 6.6 % of dermatitis patients allergic
- patch test at 10 % pet
- linear increase in annual frequency of allergy
- increased usage

Contact Dermatitis 26: 34-44, 1992.

Lichens
- Plantlike organisms
- 17,000 species
- lichen acid pickers
- woodworkers
- cosmetic products
  - axillary dermatitis- deodorants

Lichens
- Lichen acid mix
  - Usnic acid
  - Atranorin
  - Evernic acid
- Usnic acid
  - antimicrobial properties
  - anti-inflammatory properties
  - Analgesic activity
  - Increased usage in personal care products

Feverfew
- *Tanacetum parthenium*
- original use- fever, headache, migraines
- allergens-
  - sesquiterpene lactones
  - parthenolides
- contact dermatitis
- contact stomatitis
- uncommon sensitizer

Aloe
- used for soothing properties
- thousands of individual chemicals
- exact allergen unknown
- ACD in literature
- contact urticaria
**Gingko biloba**
- anti-inflammatory effects
- no allergic contact dermatitis reported
- fruit pulp contains the allergen
- extracts usually don’t use fruit pulp

**Curcumin- tumeric**
- *Curcuma longa*
- used to prevent degradation of products
- anti-inflammatory effects
- antimicrobial effects
- known irritant
- known contactant

**Arnica**
- *Arnica Montana*
- sprains, bruises, wounds
- cosmetic products
- allergic contact dermatitis reported
- often Compositae positive
- can be missed with sesquiterpene lactone

**Chamomile**
- member of Compositae family
- several species of plant
  - *Anthemis nobilis* - Roman Chamomile
  - *Matricaria chamomilla* - German chamomile
- anti-inflammatory effects
- bacteriostatic effects
- sesquiterpene lactones as allergen
- allergic contact dermatitis
- contact urticaria

**Peppermint**
- *Mentha piperita*
- Lamiaceae or mint family
- Flavoring agent
  - toothpaste, gum, mouth wash
- Several adverse events
  - ACD stomatitis
  - burning mouth syndrome
  - oral ulceration
  - chronic cheilitis

**Rosemary**
- *Rosmarinus officinalis*
- evergreen shrub
- antioxidant properties
- anti-cancer activity
- anti-photoaging activity
- allergic contact dermatitis
  - carnosol, carnosic acid, caffeic acid
- uncommon allergen
Potential Botanical Screening Allergens

<table>
<thead>
<tr>
<th>Screening Allergen</th>
<th>Positive in Pt with Botanical Allergy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragrance Mix</td>
<td>33.3%</td>
</tr>
<tr>
<td>Balsam of Peru</td>
<td>30.0%</td>
</tr>
<tr>
<td>Compositae</td>
<td>20.0%</td>
</tr>
<tr>
<td>Sesquiterpene lactone</td>
<td>6.7%</td>
</tr>
</tbody>
</table>

Dermatitis 15(2): 67-72, 2004

Patch Testing and Botanicals

- no good screening allergen
- large numbers of botanicals
- test to
  - botanical series - most relevant allergens
  - fragrances
  - patient's products

Proposed Botanical Screening Tray

- Tea tree oil
- Lichen acid mix
- Geranium oil
- Spearmint oil
- Dandelion
- Neroli oil
- Lavender
- Sandalwood oil
- Cananga oil
- Rose oil
- Ylang-ylang oil
- Compositae


Botanical Allergy Education

- avoid all botanicals
- avoid all fragrances
- read labels
- CARD

Botanicals

- increase in usage
- increase in allergy
- need to ask about usage
- difficult to screen for
- test to larger screen
- test to personal care products