

he inadvertently comes into contact with the allergens identified.

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A protocol to investigate the blockade of jellyfish nematocysts by topical agents

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The Chesapeake Bay and the US coast from New England to the Gulf of Mexico is the habitat of *Chrysaora quinquecirrha* (sea nettle), whose medusa appears at the height of summer. It has been estimated that over a million sea nettle stings occur in the area annually (1). Another jellyfish, *Physalia physalis* (Portuguese man-of-war), is responsible for serious stings worldwide, especially in southeastern Florida during the Christmas vacation.

Because cutaneous pain occurs immediately after tentacles contact skin and significant toxic or allergic sequelae occur after jellyfish stings (1), skin protection cream might ameliorate the sting. Using scanning electron microscopy to study nematocyst discharge on human cadaver skin in vitro, using another jellyfish, *Cyanea capillata*, Heeger et al. (2) reported that topical applications had a beneficial effect. Other investigators found that a thick film of petrolatum protected bathers from *Chrysaora* stings, but the thickness was not cosmetically acceptable (3). A standard in vitro test is required to screen topical agents for protection of human skin from jellyfish stings.

Adult, healthy volunteers were selected, excluding those who were pregnant or had skin diseases, alcoholism, skin product sensitivity, drug addiction, recent (24-h) ingestion of any oral/topical analgesic or antihistamine. The protocol and selection of patients was approved by our Human Volunteers' Committee.

Narrow, large polyethylene bags (53×19 cm) were placed as sleeves over the arms of volunteers to the mid-biceps region and fixed in place with paper tape (Dura-pore®). 2, 5 cm×5 cm treatment sites (1 near the elbow and 1 near the wrist) were cut out of the bags over each volar forearm. The edges of all windows were reinforced

with paper tape to prevent tentacles from slipping under the bag and stinging skin outside areas of treatment.

3 test solutions and 1 control were applied to the windows of each volunteer with an (50 µl) automatic pipette and spread manually with a finger protected by a rubber finger cot to achieve an even film. This volume was used over the skin area to achieve an application density of 2 µl/cm² – a standardized amount used to test the efficacy of sunscreen products (4). After treatment, sites were air-dried for 15 min.

Each arm was then submerged in a 45-litre salt-water aquarium, while tentacles of a freshly collected (<18 h) *Chrysaora* medusa were gently rubbed onto exposed treatment sites for 15 s per window. After the 4 windows of skin were exposed, the bags were removed. Pain was recorded at any time after initiation of tentacle contact, and treatment sites were examined for visible skin response after the bag was removed and again 30 min later. In the case of *Chrysaora*, less than 1% of patients objected to the intensity of pain felt when stung. Urticarial eruptions, when they occurred, persisted for 30 min to 4 h and pigmentation lasting longer than 24 h was observed in less than 1% of patients. Eruptions and pain were scored on a scale of trace, mild and severe, and the correlation between pain and eruption was approximately 80%.

5 persons conducted trials on 30 to 35 patients per day, accepting 4 patients every 45 min. 1 person applied and organized the distribution of the solutions and treated all the patients. 1 person recorded the data and compiled the paperwork, while the other 3 bagged, stung and later examined all patients for skin responses. The system could also be adapted for use in nature, by applying the bags over legs and wading into medusae or by

sitting in shallow water and allowing the medusae to drift over the windows.

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Contact allergy due to oil-soluble licorice extracts in cosmetic products

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Key words: contact allergy; skin-lightening products; cosmetics; oil-soluble licorice extracts; flavonoid compounds; medicaments. © Munksgaard, 1999.

Case Report

A 43-year-old woman presented with itchy reddish eruptions on the face of 1 month duration. There had been a 5-year history of Behcet's disease accompanied by macular amyloidosis on her back. Patch tests were conducted using Finn Chambers on Scanpor tape and readings were taken at 2 and 3 days after application, according to ICDRG recommendations. In the 1st patch

tests with 15 cosmetics that the patient had been using, and 33 allergens of a cosmetic series, positive reactions were noted to facial cream, foundation and essence. Further patch tests were conducted with 7 ingredients present in these 3 products. The results are indicated in Table 1. Positive reactions were noted to oil-soluble licorice extracts at 0.5, 1 and 5% pet. after 2 and 3 days. In 11 controls, results were negative for oil-soluble licorice extracts at 0.5, 1 and 5% pet. at 2 and 3 days (Table 2).

Discussion

Kawaguchi (1, 2) noted oil-soluble licorice extracts to inhibit tyrosinase activity in vitro and to have a depigmenting effect in vivo. Oil-soluble licorice extracts are widely used in skin-lightening cosmetics in Japan. Oil-soluble licorice extracts are ethanolic extracts from *Glycyrrhiza glabra* Linne and are flavonoid compounds containing glabridin, considered the main active agent, glabrene, glabrone, glabrol and others. None of these contain glycyrrhizin, a water-soluble licorice extract used in medicaments. Contact allergy rarely results from its use. Matsunaga & Fujisawa (3) reported the 1st case in Japan and this is the 1st case reported in English.

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Table 1. Patch test results for the patient using ingredients of cosmetic products

Materials	(%)	vehicle	D2	D3
licorice extracts	0.5	pet.	+	+
licorice extracts	1	pet.	+	+
licorice extracts	5	pet.	+	+
methyl paraben	5	pet.	–	–
1,3, butylene glycol	2, 5, 10	aq.	–	–
glycerin	10	aq.	–	–
<i>Scutellaria</i> root extract	1, 5, 10	pet.	–	–
yeast extract	1, 5, 10	pet.	–	–
fragrance	1, 5, 10	pet.	–	–
control (pet., aq.)		as is	–	–

Table 2. Patch test results in controls

Materials	(%)	Vehicle	D2		D3	
			?+	–	?+	–
licorice extracts	0.5	pet.	2/11	9/11	0/11	11/11
licorice extracts	1	pet.	2/11	9/11	0/11	11/11
licorice extracts	5	pet.	2/11	9/11	0/11	11/11