

Effects of sea buckthorn oil on the oral mucosa of Sjögren's syndrome patients: a pilot study

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Introduction

Sea buckthorn is a hardy bush with nutritious berries. It grows wild in different parts of Asia and Europe (Fig.1). Sea buckthorn berries and oils from different berry fractions are becoming more and more popular as special food supplements and ingredients in Japan, Europe and North America at a time when information on the effects of clinical nutrition is also increasing in the west. Beneficial effects of sea buckthorn oils on skin and mucosa have been reported in both animal experiments and clinical investigations (Baoru Yang, 2001).

Dryness of the mouth is a common clinical complaint. Approximately 10-39 % of adults suffer from dry mouth, the highest prevalences being in women and elderly.

Subjective feeling of dry mouth (xerostomia) is most often a symptom of salivary gland hypofunction, but can also be found in patients with normal salivary flow rates. Xerostomia provokes unpleasant oral symptoms such as burning mouth, difficulty with speech, chewing and swallowing. Dry mouth also enhances susceptibility to for example oral candidosis and dental caries.

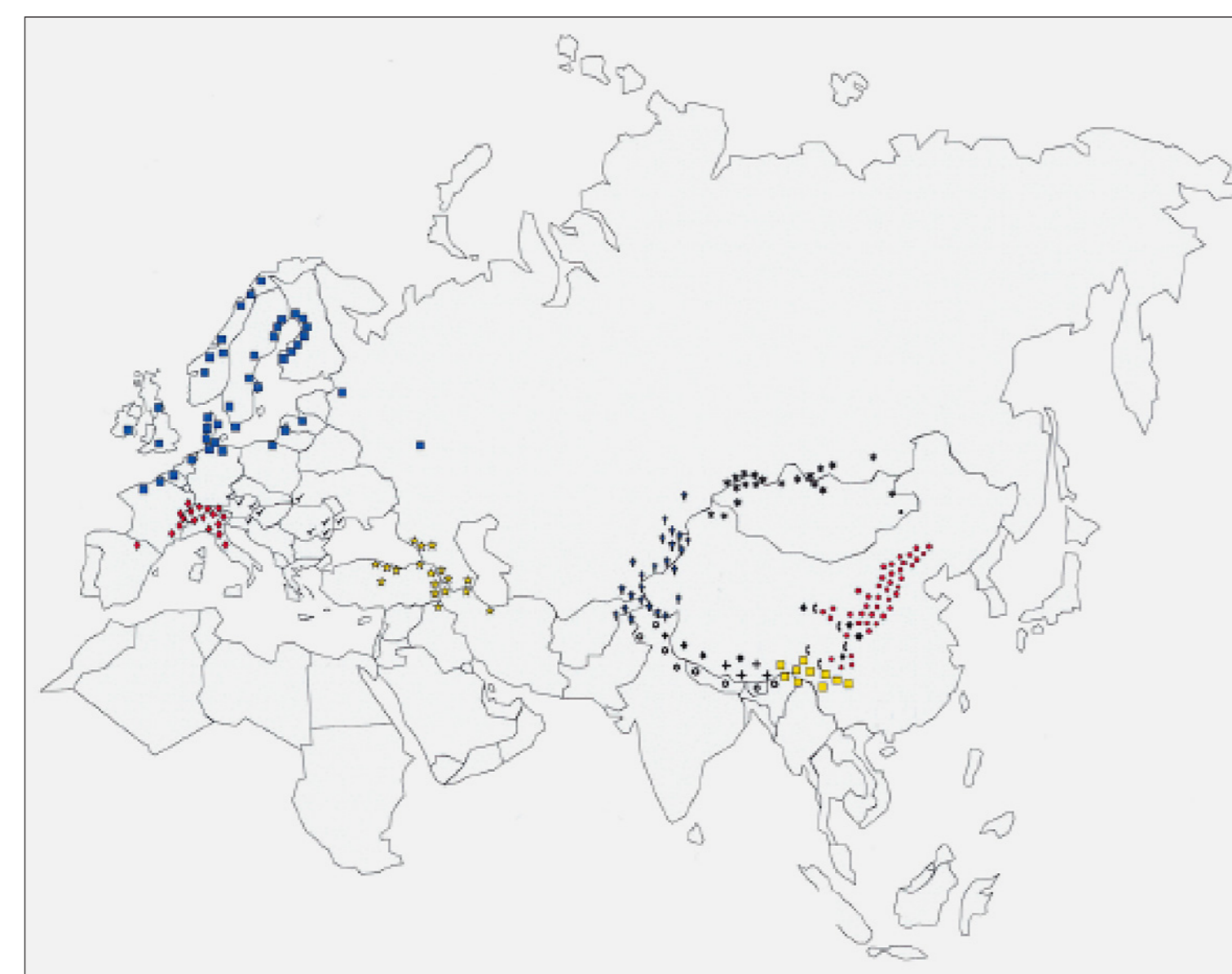


Figure 1. The natural distribution of sea buckthorn in Europe and Asia.

Aim

Our aim was to study the effect of orally ingested sea buckthorn oil (SBTO) on the condition of the oral mucosa and oral discomfort in patients suffering from symptoms of dry mouth.

Materials and Methods

Eleven patients (women, mean age 45,6 years) suffering from xerostomia were invited to the study. Six of them showed severely reduced salivary flow (≤ 0.7 ml/min) (Table 1). Most patients had diagnosed Sjögren's syndrome or it was suspected. The patients also had other health problems, for example atopic skin, allergies and dryness of eyes.

The study was a double-blind, crossover study. The two study periods were carried out during the summer and they lasted one month each, with a one-month

washout period in between. The SBTO and control oil was consumed in capsules; 5 g/day. The SBTO capsules were manufactured by Aromtech (www.aromtech.com). The control capsules contained a mixture of palm oil and soyabean oil. The patients were interviewed for subjective symptoms of oral discomfort.

Electrical impedance measurements of the mucosa were made at the beginning and at the end of each study period. Paraffin stimulated saliva was collected at all examinations.

Subjective symptoms of dry mouth

The patients were interviewed for subjective symptoms of dry mouth:

1. Does your mouth feel dry during the day?
2. Do you have to drink during the day, because of dry mouth?
3. Do you wake up at night, because of dry mouth?
4. Do you have to drink during the night, because of dry mouth?
5. Do you feel pain or burning in your mouth or on your tongue? How strong?
6. Do you feel dryness or burning on your lips?
7. Do you have difficulties swallowing any foods (easy-impossible)?
8. Do you have difficulties speaking (easy-impossible)?
9. Do you have difficulties chewing (easy-impossible)?
10. How is your appetite?

The answers were registered using VAS-index (1-10). After the use of the capsules we asked about possible changes in the dry mouth symptoms as well as any other health-related changes. We also asked the patients which capsule they preferred.

The condition of the oral mucosa

We examined the mucosa visually and also used a non-invasive multifrequency impedance spectrometer (EI, SciBase AB, Huddinge, Sweden) to study the oral mucosa. The EI technique enables measurements of both magnitude and phase at 31 frequencies between 1 kHz and 1 MHz at 5 depth settings. From the impedance spectra a set of four indices has been devised emphasising different aspects of the impedance properties of the tissues.

Case report

- female patient, age 68 years
- Sjögren's syndrome, dry eyes, stimulated saliva flow 0.1 ml/min, medications: 4, several "dry-mouth" products for oral hygiene in use
- after 2-week use of sea buckthorn oil capsules, oral dryness, need to drink often during day and night and burning mouth symptoms decreased. Patients opinion: "The oral mucosa felt moister". All 10 VAS-indices decreased. No effects with the control capsules.

Conclusions

Sea buckthorn oil may relieve symptoms of dry mouth in Sjögren's Syndrome patients with severely reduced salivary flow and/or severe symptoms of dry mouth.

Results

- No changes were detected during the study in the saliva flow rate in the 10 patients who completed the study and showed good compliance.
- No changes in the appearance of the oral mucosa or EI indices were detected during the study.
- Three subjects who showed severely reduced salivary flow and/or severe symptoms of dry mouth, reported reduced symptoms in association with the use of the SBTO capsules. No changes were reported with the use of control capsules. (Table 1).
- Two patients reported improvements of the skin in association with the SBTO capsule consumption.

Table 1. Changes in subjective symptoms of dry mouth during the study.

	Diagnosis	Saliva flow rate (ml/min)	Subjective discomfort (mild/moderate/severe)	Changes in subjective symptoms of oral discomfort	Other findings	
SIMULATED SALIVA FLOW RATE (ml / min)	> 0,9	Sjögren's Syndrome, Fibromyalgia	2,2	moderate	6 symptoms decreased for the SBTO capsule	-
		Sjögren's Syndrome	1,9	mild	no change	-
		Sjögren's Syndrome	1,0	moderate	no change	Improvement of skin
0,7 - 0,9	Atopic skin	0,8	moderate	no change	Improvement of skin	
	Sjögren's Syndrome	0,7	severe	no change	-	
	Asthma	0,7	severe	no change	-	
< 0,7	Sjögren's Syndrome, Kollagenosis	0,6	moderate	1 symptoms decreased for the SBTO-capsule	-	
	Sjögren's Syndrome, Arthritis Rheumatoides	0,5	mild	no changes	-	
	Sjögren's Syndrome	0,5	moderate	no changes	-	
	Sjögren's Syndrome, Scleroderma	0,1	severe	4 symptoms decreased for the SBTO capsule	-	