



## Severe burn on 81% of body surface after sun tanning

Güneşte bronzlaşma sonrası vücut yüzeyinin %81'inde ağır yanık

Marcos SFORZA,<sup>1</sup> Katarina ANDJELKOV,<sup>2</sup> Renato ZACCHEDDU<sup>3</sup>

We report herein the case of a 42-year-old woman who presented to the Burns Unit with 81% of her body surface severely burned following sun bathing, after applying fig leaf tea as a tanning agent. The patient was hospitalized for 13 days in a Burns Intensive Care Unit, and was discharged for an ambulatory follow-up. The treatment of such burns does not differ from any conventional treatment for heat-induced second-degree burns. The physiopathology of the phytophotodermatitis induced by such homemade tanning solutions rich in psoralen is discussed in detail.

**Key Words:** Burns; fig leaf; phytophotodermatitis.

Bu yazıda 42 yaşında, bronzlaşmak için incir yaprağı çayı sürmüş ve güneş banyosu sonrası vücudunun %81'i ağır biçimde yanmış halde yanık ünitesine gelmiş bir olgu sunuldu. Hasta yanık ünitesinin yoğun bakımında 13 gün yattı ve ayaktan takip için taburcu edildi. Bu tip yanıkların tedavisi, ikinci derece sıcaktan yanıkların konvansiyonel tedavisinden farklı değildir. Böyle ev yapımı yoğun psoralen içeren bronzlaştırıcı çözeltilerin tetiklediği fitofotodermatitin fizyopatolojisi ayrıntılı tartışılmaktadır.

**Anahtar Sözcükler:** Yanıklar; incir yaprağı; fitofotodermatit.

The amount of solar radiation absorbed by the skin can induce skin burn. Normally, first-degree burns are the most common after sun tanning. The use of tanning-facilitating agents can accelerate this process, causing deeper and more severe damage.

Sun tanning is routine in tropical countries. The use of tanning agents to help obtain the "perfect tan" is also a common practice. The ideal product should contain moisturizing and solar protection agents. As these products are substantially more expensive, the poorer segments of the population usually improvise with dangerous homemade solutions.

We report herein a case with severe and extensive sunburn (81% of the body surface) due to the use of a homemade solution using fig leaf tea as a tanning agent.

### CASE REPORT

A 42-year-old woman was taken to the Burns Unit with a history of sun tanning using fig leaf tea 24 hours

before. The patient also reported to be suffering from severe pain, dehydration and nausea with associated vomiting.

On the physical examination, 81% of the patient's body surface was burned (according to Lund-Browder scale), with the majority being second-degree and with no third-degree associated burn (Fig. 1a). The patient was diagnosed with severe skin burn and was admitted to the Burns Intensive Care Unit.

Deep venous catheterization was performed immediately, and the patient was subjected to a rehydration protocol (Carvajal) and underwent mechanical debridement under deep sedation (Fig. 1b).

The mechanical cleaning of burn patients is conducted by a plastic surgeon with the assistance of a nurse and an anesthesiologist responsible for the sedation. In our unit, the dressing changes are done in the mornings with additional afternoon dressings when necessary. Propofol and ketamine are used for seda-

<sup>1</sup>UNIFESO School of Medicine, Rio de Janeiro, Brasil;

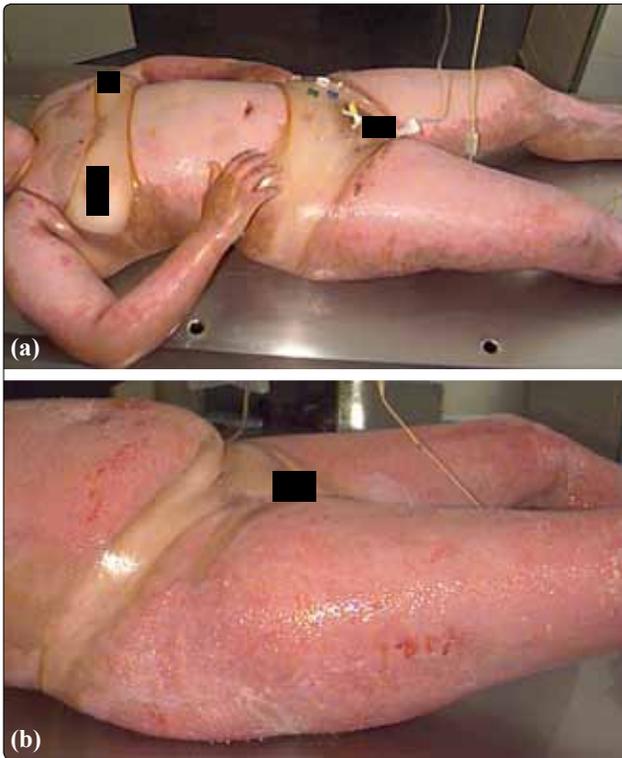
<sup>2</sup>Belmedic Hospital, Belgrade, Serbia;

<sup>3</sup>Dolan Park Hospital, Milan, Italy.

<sup>1</sup>UNIFESO Tıp Fakültesi, Rio de Janeiro, Brezilya;

<sup>2</sup>Belmedic Hastanesi, Belgrad, Sırbistan;

<sup>3</sup>Dolan Park Hastanesi, Milano, İtalya.



**Fig. 1.** (a) 81% of the patient's body surface was burned, and (b) underwent mechanical debridement under deep sedation. (Color figures can be viewed in the online issue, which is available at [www.tjtes.org](http://www.tjtes.org)).

tion. Ketamine induces an effective hypnotic as well as anesthetic effect, but demands an experienced anesthesiologist for its management.

The dressing procedures applied to this patient were the same as with any other second-degree burn injury caused by heat. This patient needed only morning dressing changes on a daily basis. The occlusive dressings were made with 4-amino-N-(2-pyrimidinyl) benzenesulfonamide silver salt cream (also known as silver sulfadiazine or Dermazine®) for the first 7 days. The silver sulfadiazine acts as an antiviral, antibactericidal and antifungal agent until the natural process of re-epithelization begins. After the body was able to reinstall its own natural barriers, the occlusive dressings were changed to Vaseline until she was released from the Burns Unit. This patient did not require any skin grafts and did not develop any skin infection during the process. The patient was hospitalized for 13 days and was discharged for complementary ambulatory follow-up when fully re-epithelized.

## DISCUSSION

Various substances in third-world countries are used for tanning by the poor population.<sup>[1]</sup> A mix of the fig leaf's tea with a mineral oil is a quite common homemade tanning solution.<sup>[2]</sup> The fig tree is a bearer tree of the Moraceae family, commonly found in tropi-

cal areas. The fig leaf (*Ficus carica*) is rich in psoralen, which is the active substance responsible for the stronger and deeper tan effect.<sup>[3,4]</sup>

Psoralens intercalate in DNA, but do not establish covalent bonds in absence of light. Under the effect of light, the psoralens intercalated in DNA are activated, even in the absence of oxygen, and establish intra- or inter-strand covalent bonds with bases, forming adducts. In the presence of oxygen, there is, in addition, formation of superoxide radicals that damage DNA. By these two mechanisms, psoralens, under the influence of light, inhibit replication and transcription. They increase pigmentation by acting on melanocytes, as a very strong photosensitizing agent.<sup>[5]</sup>

Fortunately, the burn injury caused by this agent can be treated easily in any hospital as any burn inflicted by heat. The fig leaf does not lead to any specific chemical burn per se. Moreover, it mainly precipitates sunburn by allowing the sun radiation to promote a severe phytophotodermatitis in over-photosensitized skin. As illustrated in this unique case, the treatment of this particular burn fortunately does not differ from that of any severe heat-induced burn.

In Brazil, several hospitals reported more than 50 cases of fig leaf-induced burn, in one summer, exclusively in their areas. The easy access to the components and the almost zero cost make this a very attractive practice. There are no reports of death caused by these burns thus far.<sup>[6]</sup> The official agencies in these countries are already developing education campaigns to try to alert the population to the risks of this practice. However, reports in the medical literature are increasing every year.

*Conflict-of-interest issues regarding the authorship or article: None declared.*

## REFERENCES

1. Piccolo-Lobo MS, Piccolo NS, Piccolo-Daher MT, Cardoso VM. Sun tanning-related burns-a 3-year experience. *Burns* 1992;18:103-6.
2. Bollero D, Stella M, Rivolin A, Cassano P, Risso D, Vanzetti M. Fig leaf tanning lotion and sun-related burns: case reports. *Burns* 2001;27:777-9.
3. Zaynoun ST, Aftimos BG, Abi Ali L, Tenekjian KK, Khalidi U, Kurban AK. *Ficus carica*; isolation and quantification of the photoactive components. *Contact Dermatitis* 1984;11:21-5.
4. Vaya J, Mahmood S. Flavonoid content in leaf extracts of the fig (*Ficus carica* L.), carob (*Ceratonia siliqua* L.) and pistachio (*Pistacia lentiscus* L.). *Biofactors* 2006;28:169-75.
5. Polat M, Oztas P, Dikilitas MC, Alli N. Phytophotodermatitis due to *Ficus carica*. *Dermatol Online J* 2008;14:9.
6. Micali G, Nasca MR, Musumeci ML. Severe phototoxic reaction secondary to the application of a fig leaves' decoction used as a tanning agent. *Contact Dermatitis* 1995;33:212-3.
7. Ozdamar E, Ozbek S, Akin S. An unusual cause of burn injury: fig leaf decoction used as a remedy for a dermatitis of unknown etiology. *J Burn Care Rehabil* 2003;24:229-33.