Phytophotodermatitis (PPD) is a nonallergic contact dermatitis where a phototoxic chemical comes into contact with the skin and UV light. PPD associated with rue is a rare skin reaction caused by chemical substances (furocoumarins or psoralens) found in this herb with phototoxic effects when exposed to sunlight. PPD could be classified as a chemical burn when the phytophototoxic agent is exposed to UV light for a long period of time and is not quickly removed.

Rue, also called *Ruta graveolens* L., is an herbaceous perennial with origins in the Mediterranean region. It is currently cultivated in many parts of the world. Since ancient times, rue has been part of the European apothecaries. Some significant Greek and Roman authors, such as Hippocrates or Dioscorides, described the use of rue. In traditional medicine, *R. graveolens* has been used for pain relief, to treat eye problems, and for anti-inflammatory, antidiabetic, and insecticidal activities. The commonly known phytochemical compounds from *R. graveolens* are acridone alkaloids, coumarins, volatile substances, terpenoids, flavonoids, and furoquinolines. This case report aims to share a major burn case associated with superstitious uses of rue and tanning beds within the medical community.

CASE REPORT

A 37-year-old female patient presented to the emergency room at Hospital Fundación Santa Fe de Bogotá presenting superficial second-degree burns on her neck, thorax, back, and upper and lower limbs. The estimated percent of total burn surface area was 85%. The patient reported that 3 days before presenting to the emergency room, she covered herself with rue “to have good luck,” took a regular shower, and had a tanning bed session. One day after the tanning bed session, she began experiencing itching and redness where the rue was applied, with injuries such as first degree burns that progressed to second degree at the time of consultation.

In the emergency room, the patient was rehydrated and transferred to the intensive burn care unit. The patient presented an estimated percentage of total burn surface area of 85% with second-degree burns. It took two and a half months to apply multiple debridements and bandage coverage before discharge. One month later, the patient presented a dark purplish pigmentation mainly in the lower limbs. Since ancient times, rue has been used as part of medical pharmacy, insecticidal activities, and for superstitious purposes. In many countries, rue is used as part of an elixir that helps with bad luck, envy, and anguish, and the risks associated with those uses are unknown. This is a critical and alarming public health problem. Awareness of possible complications that could develop after rue and tanning beds should encourage patients and physicians to prevent and treat this dangerous combination.
and coverage with dressings without needing skin grafts. The infection was treated jointly with the group of internal medicine, using cefazidime, avibactam, and linezolid. The patient was discharged with adequate completed epithelization. Nevertheless, she presented purplish dark pigmentation mainly in the lower limbs (Fig. 3A, B).

**DISCUSSION**

PPD refers to the dermal loss after the reaction between a phytophototoxic substance and ultraviolet radiation (UV), most specifically UVA radiation, resulting in severe burns in the most rare cases. It is known that UV radiation is a part of the spectrum of light. UVA is the ultraviolet radiation that ranges from 320 to 400 nm. UVA rays penetrate deep into the skin and are responsible for tanning. Tanning beds work with fluorescent bulbs that emit mainly UVA, with smaller doses of UVB. The UVA radiation emitted by tanning beds is three times more intense than the UVA in natural sunlight. The activation of the phytophototoxic substance just requires a little amount of UVA. Rapp et al described that the UVA radiation from a cloudy day is enough to initiate the reaction. Rue phytodermatitis is essentially a chemical burn. In chemical burns, the damage in the tissues continues until the chemical is removed, which could result in deeper burns.

Some plants have a phototoxic substance mechanism for defense known as furocoumarins. The family of furocoumarins includes the psoralens, which are natural compounds present in many plants, including parsley, parsnip, celery, citrus, and rue. Among the psoralens are a group of photochemotherapy substances such as 5-methoxypsoralen and 8-methoxypsoralen. The reaction mechanism binds the activated psoralen to RNA and DNA in the cell nucleus, whereby the furan ring cross-links with pyrimidine bases. The reaction increases oxidative stress in the cell and damages the cell membrane, leading to tissue edema.

In Colombia, rue has been used as part of traditional medicine for many years. It is known as the female herb
because rue helps relieve period pains and postpartum sickness, and helps induce abortion. Additionally, rue is also part of an elixir that includes seven more herbs, and it is utilized, in widespread beliefs, as a lucky charm. It is believed that the seven herbs elixir can help with lousy luck, envy, and heartbreak. This is the reason many people cover themselves with rue.

To our knowledge, this is the first study that describes a phytophototoxic injury of this extension, and it is associated with tanning beds. We used the terms rue, *Ruta graveolens*, burn, and phytophotodermatitis to do an article review on Pubmed. Five articles were found that reported the association between rue and phytophotodermatitis but with minor lesions.

We have had three burn cases associated with rue and tanning beds in our hospital since the burn unit opened in January 2018. The indiscriminate use and widespread belief of rue and the unconscious use of tanning should be associated with major burns as an increasing public health problem. This association raises the risk of worsening injuries and decreases the prognosis of the patients.

**CONCLUSIONS**

Rue and derivatives contain phototoxic chemicals that can cause severe phytophototoxic injury becoming chemical burns with major extension. The medicinal and superstitious purposes of rue increase the risk of burns. Tanning beds are frequently used for esthetic purposes; however, when combined with the application of herbs, the result is a patient with a major burn. Thus, we agree with previous authors that this is a critical situation to raise awareness among the population and medical community.

**Fig. 3.** The patient after discharge. Front (A) and back (B) photographs showing purplish dark pigmentation in the lower limbs.

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