



# Irritant phytocontact dermatitis caused by buttercup at various times: A series of three patients

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## ABSTRACT

Traditional herbal medicine is very common in the Anatolian regions and has been used for centuries. In this study, it was aimed to show the course of dermatitis in cases of phyto contact dermatitis caused by buttercups when the patients presented at different times after the application. 3 patients who lived in the same region presented at the family practice clinic because of lesions which emerged after the topical application of plants from the *Ranunculaceae* family for knee pain. The patients presented on the 1st, 4th and 15th day respectively after application and were all diagnosed with irritant phyto contact dermatitis. In Turkey, particularly amongst the elderly, the use of herbal treatments is greater than has been estimated. Therefore, when family practitioners observe lesions particularly on joint surfaces, the use of plant extracts must be questioned.

**Keywords:** phyto contact dermatitis, ranunculaceae, butter cup

## INTRODUCTION

Traditional herbal medicine has been used in the Anatolian region for centuries (1). Direct application of plants to the skin for anti-inflammatory, anti-rheumatic and antibiotic effects is used by patients in pain or with wounds (2). However, when plants used by patients without sufficient knowledge of the phyto-therapeutic agent and dosage, there can be harmful consequences. Serious adverse effects have been reported ranging from simple dermatitis to anaphylaxis (3).

The buttercup plant of the *Ranunculaceae* family is known in Sivas, Turkey as 'dügün çiçeği'. It grows at high altitude and is used in traditional treatments, applied as a paste to the joint to alleviate the pain of rheumatological disorders and osteoarthritis (4). Due to anti-inflammatory and antimicrobial effects, it is also used in the treatment of hemorrhoids, abscess and burns (5). In this study, it was aimed to show the course of dermatitis in cases of phyto contact dermatitis caused by buttercups when the patients presented at different times after the application.

## CASE REPORT AND RESULT

**Case 1:** A 69-year old female presented at our out-patient clinic because of wounds in both legs. The patient was under treatment for hypertension and hyperlipidemia but had no other disorder. For a long time the patient had been experiencing knee pain and had obtained no relief from pain killers. On the day before presentation at the clinic, using a traditional method learned from her mother, she had applied some ground buttercups to her legs and covered them with pieces of muslin cloth. In the physical examination of the patient, a dark pink lesion of approximately 3 x 4cm in diameter with circular borders was seen on the medial surface of the right knee, slightly papulated on the skin surface. In the upper mid adjacent area, there were satellite lesions <1cm (**Figure 1a**). The left knee was almost completely covered with scattered crusted ulcers, with one area of dark pink plaque approximately 5 x 7 cm in size with sharp borders and several pigmented satellite plaques adjacent laterally (**Figure 1b**). The pain had been slightly relieved. According to the results of the physical examination of the patient, all the vital signs were stable, and the hematological and

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**Figure 1:** (a) Papulated lesion on the medial surface of the right knee on the 2<sup>nd</sup> day of buttercup application. (b) Scattered crusted ulcers and satellite plaques on left knee on the 2<sup>nd</sup> day of buttercup application



**Figure 2:** Ulcer covered with an adherent crust on the 5<sup>th</sup> day of buttercup application

biochemical laboratory findings were also normal except for the level of plasma glucose and triglyceride. Topical hydrocortisone %5 treatment was applied to the wounds for 2 weeks with daily fomentation dressings.

**Case 2:** A 69-year old male presented at the polyclinic requesting a drug prescription for knee pain. On the recommendation of a friend, the patient had applied buttercups to his knees 4 days previously for the chronic knee pain he was experiencing. The patient had gathered buttercups, made a paste which he applied to his knees and then covered these with cloth. When he removed the coverings after one day, there were lesions on his knees. The patient reported that he had used the same application 10 years previously, had left the paste on his knees for a shorter time and lesions had developed in the same way which then spontaneously healed after a short period. In the physical examination, there was an 8 x 10 cm ulcer covered with an adherent crust with a partially pigmented superior edge adjacent to the knee on the right leg upper anterior surface (**Figure 2**). When questioned about the joint pain, the patient reported that it had significantly reduced. All the vital signs and laboratory findings were normal. After 2 weeks of treatment with fusidic acid and dressings, the lesions recovered leaving hyperpigmentation.

**Case 3:** When it was questioned whether anyone else in the vicinity of the 2 cases reported above had made the same application, a further case came to light and the patient was invited to attend the polyclinic. This 71-year old female patient had experienced knee pain for 8-10 years and seen no benefit from pain killers. The patient had refused the recommended surgery and had no other diseases. As in the other cases, the patient had gathered buttercups 15 days previously, made a paste, applied it to the knees, covered it with a cloth and she reported that the pain had recovered with the application. In the physical examination of the patient, there was pigmented, macular wedge-shaped plaque in



**Figure 3:** pigmented, macular wedge-shaped plaque on both knees on the 15<sup>th</sup> day of buttercup application

the knee region of both legs spreading towards the thighs, which had sharp irregular borders on the left knee and were barely perceptible on the right knee (**Figure 3**).

## DISCUSSION

In Turkey the topical or systemic use of traditional herbal treatments is extremely widespread in the geriatric age group in particular, and topical use is most often preferred for rheumatological diseases (6).

The topical application of plants to the skin may show positive effects on some dermatological and rheumatic diseases, but they may also have many adverse effects.

Phyto-dermatitis, is a skin reaction caused by plants and can be classified as allergic contact dermatitis, irritant contact dermatitis, photo allergic contact dermatitis, photo toxic contact dermatitis and contact urticaria. The most common forms are allergic contact dermatitis and irritant contact dermatitis (7). The cases presented in this manuscript were irritant contact dermatitis because the lesions were limited to the exposure area.

In this case series the cause of phyto-dermatitis was the buttercup plant from the *Ranunculaceae* family, known in Turkish as 'wedding flower'. The *Ranunculaceae* family includes about 1900 species and approximately 70 members of these are found in Turkey (8, 9). All *Ranunculaceae* plants contain the lactone ranunculin, and when fresh plants are bruised, ranunculin is converted to the irritant protoanemonin. Dried plants do not contain protoanemonin so they are not irritant (10, 11).

In the glucoside form of protoanemonin, there is a strong irritant property which is responsible for local effects (12). Protoanemonins are mostly found in the flower part of plants and transform to non-irritant anemonins through rapid polymerisation. In addition to strong antimicrobial and antimycotic effects, protoanemonin also shows an anti-inflammatory effect (13). *Ranunculus illyricus* L. has been supplied for phyto-therapy as analgesic medication. The reported pain relief from the use of this plant can be associated with the anti-inflammatory effect of protoanemonin. The powerful antibiotic effect can be held responsible for the reduction of pain in the presence of septic arthritis. Due to the antipyretic properties of anemonins, the plant is also known to have a partially relaxing effect (4).

In literature, there are approximately 25 cases of phyto contact dermatitis caused by *Ranunculaceae* species (14). Cases related to local side-effects of the plant have been reported from Turkey. In a case presented by Değirmenci et al. (2), erythematous and bullous lesions were determined within 1 day of the patient using the *Ranunculus scleratus* plant. In the current series, case no 1, there were widespread erythematous lesions but no bullous lesions in the acute phase. Elmas et al. (14) observed ruptured bullous lesions and that the lesions had surrounded the knee in the examination of

a patient 3 days after the application of *Ranunculus Damascenus*. In Case no 2 of the current series, this state was present 4 days after the application. There were sharply bordered, encrusted, non-bullous lesions. In a case presented by Turan et al, it was learned that a patient unresponsive to antibiotic treatment had applied topical buttercups, then had continued treatment with a mixture of topical epithelisation, steroids and vaseline and recovery was seen with this treatment with post-inflammatory hyperpigmentation (4).

In case no 3 of the current series, spontaneous recovery with hyperpigmentation was seen on the 15th day after application, with no treatment applied to the lesions. The differences between the cases could be associated with differences in the sub-species of the *Ranunculus* plant according to the region or to the amount or concentration of the paste applied. In a review of 25 cases by Akbulut et al. (11) it was stated that the degree of damage increased with duration of contact.

This case series can be considered of value in respect of showing the conditions that can develop without treatment on the 1st, 4th and 15th days following the application of a paste form of *Ranunculaceae* plant. The 3 cases presented here showed spontaneous recovery with hyperpigmentation on the 15th day without any treatment. This shows that this condition may be spontaneously recover without any treatment. Although dermatitis disrupts the integrity of the skin in the acute phase, no scar tissue was seen to form in the spontaneous recovery. In Turkey, the use of plant treatments is greater than has been estimated, especially in the elderly population. That local side-effects are not seen in every individual using this treatment can be associated with reasons as mentioned above, such as fresh usage, regional differences in plant sub-species and differences in irritant effect according to the plant. When patients present with these types of lesions, especially on joint surfaces, Family Practitioners should certainly question the history of plant extract use.

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