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## KANGAL HOT SPRING WITH FISH (KANGAL FISHY HEALTH SPA) & PSORIASIS TREATMENT

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### **Abstract**

Kangal spa therapy was named ichthyotherapy by some authors [13,14]. The treatment of Kangal Hot Spring with Fish (Kangal Fishy Health Spa) should not be considered as ichthyotherapy. It is rather a method of balneotherapy-climatotherapy effectivity of which is accelerated and increased by the contribution of the fish.

*Key words : Psoriasis, Kangal hot spring, Fish*

### **Introduction**

Psoriasis is a disease of unknown origin with an incidence of 1 % to 3 %. Several drugs have been tried to treat psoriasis so far, but none of them managed to cure the disease completely or prevented its recurrence. Climatotherapy-balneotherapy is another method used, like that which is performed in other countries.

### **General information**

#### **History**

Kangal Fishy Health Spa is located in Kangal district of Sivas.

There are a number of spas in the area of Sivas. It has vastly been visited since Roman times. The spa named as *Isıl Çermik* (hot spring) in the documents is located within the city centre. It takes place in Seljukian documents dating back to 1333 and, since then, it has been used for the treatment of arthritis and skin diseases [1].

Sivas became as one of the leading health centers of Anatolia in the Middle Ages. There were two health centers (dar al-Shifa) in that period which corresponds to contemporary Medical School. One of them is called as *Izzeddin Kaykavus the I Health Centre* (founded in 1217) and located in the city centre of Sivas whilst the second one took place in the East, 180 km away from the city centre, and was named as *Divrigi Melike Turan Melek Health Centre* (founded in 1228). Water was used a mean of treatment in both Health Centers [2].

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Today Kangal Fishy Health Spa takes place in between of these two health centers and it was used for drinking and cleaning purposes by local people in around 1850s.

According to a legend, upon being noticed that it treats skin diseases in people and animals the spring happened to be an important centre for the treatment of skin diseases. According to another legend it is narrated that the spa began to be used by the local people after it was observed that it cured shepherds' skin diseases in their legs when they were walking in the water. In addition to the skin diseases, at that time, arthritis, gynecological diseases and psychiatric ailments were also treated there.

Kangal became a municipality of Sivas in 1902. The local city council, which was appointed in 1942, started building treatment pools.

Since the Kangal Fishy Health Spa was publicized in the media in around 1980s it has been drawing attention from outside Sivas. The first scientific publication regarding the spa appeared in 1983 [3].

A symposium named Kangal Fishy Health Spa-Psoriasis Treatment was organized in 1993 by the author of this article [4]. In connection with its such an academic dimension, it was officially recognized as a treatment centre by the Ministry of Health of Turkey Republic in 2004.

Kangal Fishy Health Spa is located 14 km north of Kangal, a small town in the vicinity of Sivas. The altitude of spa is approximately 1600 meters. The spa consists of 5 pools with a total capacity of 200 L/sec. The mean water temperature is 35°C, the mean oxygen value is 2.9 ppm, and the pH value is 7.8.

This spa water contains many elements and most important of them is selenium (1.3 mg/L). Chemical analysis of the spa water is shown in tables 1 and 2 [5].

<b>Chemicals</b>	<b>mEq/L</b>	<b>mg/L</b>
Sodium (Na <sup>+</sup> )	0.17	3.91
Potassium (K <sup>+</sup> )	0.03	1.09
Lithium (Li <sup>+</sup> )	-	-
Ammonia (NH <sup>+</sup> )	0.006	0.11
Magnesium (Mg <sup>++</sup> )	3.75	44.95
Calcium (Ca <sup>+</sup> )	2.71	54.22
Iron (Fe <sup>++</sup> , Fe <sup>++</sup> )	0.006	0.175
Zinc (Zn <sup>++</sup> )	0.0006	0.02
Aluminum (Al <sup>+++</sup> )	0.045	0.005
Manganese (Mn <sup>+</sup> )	0.004	0.1
Copper (Cu <sup>++</sup> )	0.0008	0.027
Chrome (Cr)	10.006	0.1

Lead (Pb)	0.001	0.1
Selenium (Se)	0.016 (mmol/L)	1.30

**Table 1. Cationic ingredients of spa**

Chemicals	mEq/L	mg/L
Bicarbonate (HCO <sub>3</sub> <sup>-</sup> )	4.96	302.4
Carbonate (CO <sub>3</sub> <sup>-</sup> )	-	-
Chloride (Cl <sup>-</sup> )	0.675	23.92
Iodine (I)	-	-
Bromide (Br)	0.0084	0.675
Flouride (F <sup>-</sup> )	0.014	0.27
Sulphate (SO <sub>4</sub> <sup>-</sup> )	0.958	46.00
Nitrate (NO <sub>3</sub> )	0.053	3.32

**Table 2. Anionic ingredients of spa**

What makes the Kangal Fishy Health Spa unique among the other spas in the world is the fish living in the spa ? The fish increase the effectiveness of the spa. Two different types of fish live in the pools. Both of them are members of the *Cyprinidae* family. The first type of fish is *Cyprinion macrostomus HECKEL*, the second type is *Gara rufa obtusa HECKEL*. Although these fish have an ordinary morphological structure, the length of their bodies is shorter (4-14 cm) than other members of the same family, which live in the rivers of this area. Despite the high temperature of water, these fish live in the pools, settling to hot water. Because of the scarcity of natural food sources in the pools, human skin is an attractive and easy food source for these fish [3,5].

## Treatment of the psoriatic patient in the Kangal spa

Every year, five thousands psoriatic patients on average visit the spa seeking treatment for their diseases. The majority of the visitors consist patients of psoriasis diseases. Other skin diseases include atopic eczema, eczema, vitiligo, lichen and diseases belong to ichthyosis family [6].

### Choice of Patients

In Kangal Fishy Health Spa, whilst the patients with *psoriasis vulgaris* and arthropathic psoriasis are treated in general, patients with erythrodermic or pustular psoriasis and those with a history of photosensitive disease are not treated. The patients are suggested not to use photo sensitizer's drugs and foods. During the treatment period topical or

systemic drugs are not allowed to use, except for moisturizers. In addition, during treatment the patients are asked to drink spa water *ad libitum*.

### **Treatment Procedure**

The patients get into the pool twice a day, once in the morning and once in the afternoon. The period of staying in the pools is approximately 7.4 hours during which the patients also receive natural UV light in the pools. Between the hours of 11:00 and 14:00, they are told not to be subjected to direct UV light. In the pools, 10 to 15 persons can take the treatment at the same time. Traditionally, the recommended time of treatment in the spa is 21 days. The average period of staying in the spa is 11 days [7].

On the first day of the treatment, the squamae on the patients are totally cleaned by the fish. The cleaning process of squamae continues during the treatment process and at the end, the patients are left with no squamae. During the cleaning process of the squamae, on the psoriatic plaque, superficial exulceration and slight hemorrhage may be seen. On the proceeding days, these gradually decrease and finally disappear. Due to these superficial exulcerations, the *Koebner phenomenon* does not occur. Furthermore, it can be said that the Reverse *Koebner phenomenon* takes role in the curing of these psoriatic plaques.

### **Effects of the Minerals**

The continuous cleaning of the squamae by the fish and the hydration of skin in the pool increase the penetration of minerals through the epidermis. Especially, the penetration of selenium increases. Besides that, the penetration of other elements like magnesium, zinc increase and this takes role in the treatment.

### **Phototherapy Effect**

Since the spa is at an altitude of 1600 meters, the doze of natural UV light increases. Hydration of the skin increases of UV effect [8]. The continuous cleaning of the squamae by the fish and the hydration of the skin increases the effectiveness of the treatment. It can be said that the selenium present in the water prevents the carcinogenic effects of natural phototherapy.

### **Systemic Effect**

The spa water is drinkable. People staying there maintain their water requirements from the spa as well as drinking that water for treatment purposes. The systemic intake of selenium and other minerals plays a role in the treatment. The selenium and other elements have antioxidant, antiproliferatif and immunomodulatory [9,10] effects on the skin.

### **Psychological Effect**

The cleaning of the squamae on the first day effects the psychological situations of the patients in a positive way. The patients are being treated in the pools. The existence of 10 to 15 people in the same pool and the communication between them helps the treatment process. Also, the assumption made by some people that this is a holy spa improves

the psychological situations of the patients who think that way. In addition to skin cure mentioned so far it is assumed that by staying in the Spa people get the opportunity to be away from daily stress and hassles and from other emotional tensions.

A study [11] conducted in our clinic : Brief Symptom Inventory (BSI) tests before and after treatment were evaluated. A decrease was observed in the points of global symptom index and sub measures of obsessive-compulsive somatization, interpersonal sensitivity, phobic anxiety, paranoid ideation, depression, hostility, statistical evaluation was meaningful. No change of BSI for anxiety was obtained after the treatment according to the results of initial. This study showed the patients' psychology affected positively.

### **Hydration Effect**

The patients with psoriasis have dry skins. The continuous hydration decreases the symptoms of the patient. In addition, it can be said that with hydration the antigens and antigenic stimulation in the epidermis decreases [12].

### **Reverse Koebner**

While the fish clean the squamae starting from the first day, superficial exulcerations occur. The beginning of curing in these plaques may be explained by Reverse Koebner phenomena.

### **Jacuzzi Effect**

Water springs from the pools' bases ; jacuzzi effect is present although a little.

### **Side Effects**

During the treatment process, no serious side effect is seen. On the patients with scalp psoriasis, irritation dependent otitis can develop, as a result of keeping their heads in the water continuously. Patients should use earplugs for prevent this adverse effect.

### **General Progress**

In our study conducted in this spa, the evaluations of the patients are being done with the PASI scoring method. The PASI scores that are being recorded with intervals of 3 days start to decrease immediately. While 57 % of the patients recover completely at the end of 21 days treatment period, the decrease on the PASI scores of the remaining patients is over 80 %. It can be said that, as the period of staying in the spa increases, the PASI scores will decrease even more.

### **Remission Length**

In our study, the rate of patients being in remission for one or more years is 22.8 %. According to what is told by the patients, the remission length is longer as compared to any drug treatment. 36.4 % of the patients in the spa consist of those coming back to the spa for the second time or more. These patients come to the spa once a year and continue their treatments.

## Conclusion

The following factors seem to play a role in the treatment of psoriasis in the spa [15-17].

- The completing of decapitage in a very short period like 4-8 hours, and the repeating of decapitage every day.
- Continuous cleaning of squamae : increase of the penetration of elements; increase of the UV light effect and hydration.
- The effects of selenium and other elements in the drinking and bathing water. The selenium and other elements have antioxidant, antiproliferative and immunomodulatory effects on the skin diseases in two ways : systemic effect (by drinking) and local effect (by penetrating into the skin).
- The effect of natural UV light in the spa.
- Group treatment and psychological effect.
- Jacuzzi effect of the water on the cleaning of squamae.
- The Reverse Koebner phenomenon.

These 7 factors altogether play an important role in psoriasis' balneotherapy-climatotherapy. In order to prove these assumptions further scientific and molecular researches in the spa are needed.

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