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# Salt-water resources within the Romanian territory

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## Abstract

*Romania is among the European countries with a remarkable balneary potential as it contains two-thirds of mineral, thermal and salt-water from Europe. From about 8000 springs, only 2000 are used according to data from the World Travel Council report, authority of World Tourism Organization. The use of natural treatment factors like natural springs, climate and mud in our country for therapeutic purposes dates back to ancient times. There are sources showing up that since Bronze Age, natural springs were used for healing. Also, the Neolithic settlements from Eastern Carpathians are attesting the oldest use of salt-water springs in the world. Water composition and concentration depends on the types of geological layers that water cross during underground pass. Salted water (chlorine) are widespread, as there are thousands of sources of this kind in country area, from those which have low salt concentration and are used for internal cure, to those with a very high salt concentration that are only used for baths. This type of natural water can be found either in high concentrated salt lakes or it can be seen as springs, mostly located within the Carpathian Mountains and sub-mountains area.*

## Rezumat

*Romania se află printre ţările cu un remarcabil potenţial balnear întrucât deţine două treimi din din apele minerale, termale şi sărate prezente în Europa. Astfel, din aproximativ 8000 de izvoare sunt folosite doar în jur de 2000, conform datelor furnizate de Consiliul Mondial pentru Călătorii, organism al Organizaţiei Mondiale a Turismului. Utilizarea factorilor naturali de cură precum cea a izvoarelor naturale, a climatului şi a nămolului din ţara noastră în scop terapeutic datează din cele mai vechi timpuri. De asemenea, aşezările Neolitice din Carpaţii Orientali atestă cea mai veche utilizare a unor izvoare cu apă sărată din lume. Compoziţia şi concentraţia apei depind de tipul geologic al straturilor pe care apa le străbate în drumul său subteran. Apele sărate (clorurosodice) sunt foarte răspândite, existând mii de astfel de izvoare pe întinsul ţării, de la cele care au o concentraţie mică de sare şi sunt utilizate în cură internă, la cele cu o concentraţie foarte ridicată de sare utilizate numai pentru băi. Aceste tipuri de apă naturală pot fi găsite în lacuri sărate foarte concentrate sau pot apărea la suprafaţă ca izvoare, majoritatea amplasate în zona Munţilor Carpaţi şi în zona submontană.*

**Keywords:** salt-water, salt, fountain, resource, resort, rehabilitation.

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# 1. Introduction

Romania's geographical location and geological structure explains the diversity and the multitude of natural therapeutic sources within its territory, which consists in a numerous thermal, mineral and salty springs, salty lakes, mineral mud, mofette, saltworks and bioclimat. Taken together, Romania's land highlight the great complexity of its relief's shapes, consequence of strong agitation that took place throughout the geological ages. The Carpathian arc that crosses Romania is a young chain, a continuation of the Alps with many similarities, but with its own personality conferred by position and form. [1]

Romania is among the European countries with a remarkable balneary potential as it contains one-third of mineral, thermal and salt-water springs from Europe. From about 8000 springs, only 2000 are used according to data from World Travel Council report, authority of World Tourism Organization. Romanian spa potential is recognized both in the country and abroad. People should realize the therapeutic value of these waters, especially as Napoleon Bonaparte asked to bring him mineral water from Căciulata for gastric disease he was suffering. [2]

The use of natural treatment factors like natural springs, climate and mud in our country for therapeutic purposes dates back to ancient times. There are sources showing up that since Bronze Age, natural springs were used for healing. In the course of time, using these natural factors for treatment reflected the stage of thinking characteristic to different eras. In ancient times, when positive sciences like physics and chemistry were at the beginning, it was used an empirical treatment because the level of knowledge wasn't allowed to determine the water chemical composition and neither to explain the mechanism of action composing natural factors. Long time, climatic spa therapy was used only on this basis and just on the time of Greeks and Romans were made some water and climate studies. Also, were started the categorizing of various mineral water sources and individualizing therapeutic and climatic spa. Balneary (spa) cure of 21 days dates back to Ancient Greeks and this duration was maintained until today as being the minimum time to achieve therapeutic effects.

In the time of Romans, in our country were developed many series of spas around springs with different properties. But, the develop of resorts on a widely scale took place by the late XIX$^{th}$ century, however the growth conditions were very old because officialdom manifested a total disinterest face to the great balneary riches of our country and to the great therapeutic possibilities they represent. Because of their therapeutic effects, spas begin to develop, especially between the Two World Wars, becoming sources of tremendous benefits for operators of all categories. [3]

The salt springs, just like mineral springs, were protected and intensely exploited by the local population at the beginning and by the state institution afterwards. In most cases, people have been using salt waters from springs and rarely from streams as the first ones are much saltier than the second ones. The salt springs were identified and most of times used by the local population. But, there were springs discovered through animals. Wild animals especially, but also sheeps were attracted by places where is a higher salinity. Organisms need salt, according to their climatic region. Animals ensure their salt intake by consuming products with a high quantity of salt, by licking salinized soils or salt cores. [4]

Identifying the sources of salt by peasants was done by tracking and recognition of different signs. Salts presence was easily recognizable in a sunny day because of salt crystals that were deposited at the earth's surface. Also, in an area where there is a lot of salt, usually the ordinary vegetation is missing and instead halophile plants are growing, also named as "flower of salt". Another way to recognize an area with salt or with a salty spring near surface is to follow the animals that

instinctively are attracted to salt. Even if today the dwellers know there signs, they did not needed to identify salt-water springs or places with salt, because in most areas they know the zones as they know themselves, inherited them from their parents and grandparents, as they have inherited all the knowledge relates to them, and all the ways of exploitation and utilization that salt can offer.

Due to the importance that salt-water has acquired in tradition of places, in most localities, fountains can be found, some of them being locked or guarded even today.

Even if in most areas where salt-water fountains exists, also underground deposits of salt can be found, in most cases the depth makes things difficult in terms of exploitation. But even if salt deposits were closer to the surface, certain aspects like the prohibition of salt exploitation across history came out.

The use of salt-water in the diet was transmitted from generation to generation and can be found until today, even becoming a tradition of the area. Dwellers use salt-water for different recipes of food preparation like baking bread, preserving pickles, preparing different types of cheese and also for obtaining fine salt. [5]

Saline manifestations, accessible for exploitation by the prehistoric human, were not found everywhere. Romania, probably the country with the biggest saline manifestations in the world, has the most significant resources of salt in Transylvania, Maramureş, Moldavian Subcarpathians, Buzău, Prahova and Oltenia. In these areas, salt can be found both in solid and liquid form. Isolated streams and salted lakes can be found also in Bărăgan. To these, Black Sea can be added in order to obtain salt.

In Transylvania, the richest areas in solid salt are those from Praid-Ocna de Jos (East of Harghita county and South-East of Mureş county), Ocna Dej and Turda (Cluj county), Ocna Mureş (Alba county), Ocna Sibiului (Sibiu county), Dumitra-Beclean (Bistriţa-Năsăud county). In Maramureş, the particularly big salt deposits are known at Coştiui, Glod and Şugatag. In Moldavia, such deposits can be found at Cacica (Suceava county), Oglinzi (Neamţ county), Târgu Ocna (Bacău county) and salt mountain from Meledic (Vrancea county). In Wallachia, the richest and easily accessible salt deposits are at Lopătari and Bisoca (Buzău county). In Oltenia, the salt deposits are in smaller number, the most important of them is represented by Ocnele Mari, next to Râmnicu Vâlcea. Each of these areas contains many salt massifs, each of them having numerous ramifications areas and covering closer or distant zones. Around all massive salt deposits, both in their neighborhood, as well as from considerable distances, there can be found numerous springs, streams and lakes with salt-water. Some salt-water lakes are placed at an appreciable distance from the salt deposit. The most important of this kind are the lakes from Brăila (Brăila county) and Amara (Ialomiţa county). Isolated salt-water springs, that can be found at a relative big distance away from salt deposits, can be found also in Transylvania at Olteni, Malnaş, Voineşti, Vâlcele and in some localities from Covasna county and Harghita county.

At the same time, certain areas from Romania are extremely poor in salt, and even sometimes this mineral is completely missing in zones like eastern and south-eastern Transylvania (territory between Călimani, Gurghiu, Harghita, Perşani, Buzău, Vrancea, Nemira, Ciuc, Giurgeu, Ciucaşi and Bârsei Mountains), Crişana, Banat, most of Câmpia Română, Dobrogea, and Moldavia (eastern part of Siret). Extremely poor in salt deposits are almost all the territories bordering Romania: Hungary, Serbia, Bulgaria and south-eastern Ukraine. [6]

The most relevant discovery of salt extraction from Transylvania is the one from Valea Florilor (Valley of Flowers), located between Câmpia Turzii and Cluj Napoca. Assigned as being from the Dacian period, there are chronological arguments pushing the origins of the mine in the late Bronze

Age. Wooden gutters used in mining were found here and at Ocna Dejului. [7]

The earliest evidence for European salt exploitation was brought to light by the Museum team of Piatra Neamţ as being *Poiana Slatinei* from Lunca, Vânători-Neamţ in Neamţ county. The site is unique in Europe for its preservation of 60x25 meters, layered with ash, coal and burnt red soil. Located in the vecinity of a salt deposit that is still in use, it contains a large quantity of burned soils. The sequence of combustion followed by the storage of material have formed a mound of nearly three meters high. This operation was facilitated by a strong natural salt concentration of 160 g/l, which is six times more concentrated than the sea water. [8]

The main artifacts discovered in Poiana Slatinei consist in a large quantity of ceramic fragments. As there were not found any types of construction, but also because of the fireplaces and fragmented ceramics found, the conclusion was that archaeological deposits were accumulated by seasonal attendance and not by a usual settlement. [9]

## 2. Salt-water genesis and evolution

Water composition and concentration depends on the type of geological layers that water cross during underground pass. Salts come from the dissolution of the geological layers and from accumulation within the seawaters. Aspects about salt genesis and evolution are analyzed at the same time by geology and geomorphology. In geographic literature, salt has its origins in ocean waters, coming from the earth's crust after streams dissolution of layers. Moreover, the first type of water was a freshwater. Therefore, salt make a geological route: it is dissolved from the earth's layers, transported by rivers, accumulated in oceans and seas, rearranged under deposits form and in the end covered by recent sediments. Due to lateral movements and to tectonics, salt emerge on the surface as a plasticity result. [10]

Salted water (chlorine) are widespread, as there are thousands of sources of this kind in country area, from those which have low salt concentration and are used for internal cure, to those with a very high concentration that are only used for baths.

In many cases, the emerge of lakes was possible due to the predominance of waterproof clay-marmor rocks and to the fact that the pores from badenian surfaces are extremely rare. For these reasons, the springs that appear from the badenian deposits are found in the proximity of salt massive structures or in the convexity of geological creases that are vault shaped. Water circulation in the area where salt massifs are found and it's coming into direct contact with salt mass, leads to an intense mineralization of water after the process of sodium chlorine leaching. [11]

There is a close connection between the salt deposit position and the emerge of springs with high concentration of salinity, as most salt springs are situated close to the salt deposit. Natural salted lakes of variable size, depth and concentration emerged from salt exploitation or degradation due to erosion and atmospheric factors. The salt lakes located in Ocna Dej, Cojocna, Ocna Mureş, Praid, Ocna Sibiu, Slănic, Ocna Şugatag and Ocnele Mari are ancient salt mines, which were covered with surface and depth waters and transformed into salted lakes. The lakes from Sovata and some lakes from Ocna Sibiului emerged from natural transformations by dissolving the salt from the groundwater route followed by the collapse of earth. As a result, sinkholes were made which were filled with concentrated salty waters. The salt-water of these lakes contain a large amount of salt per kilogram. For example, Ocniţa lake from Ocna Sibiu contains 230 g, Bear Lake from Sovata 205.75 g and Sabina Lake from Turda 131.85 g.

The lakes from Câmpia Română and those which are close to seaside have similar origin. The lakes

from Câmpia Română are related to Earth's geological history, when Pontic Sea was covering Câmpia Română, west side of Oltenia and Moldova in east. The layers of salt that remained after the withdrawal of Pontic Sea are washed up by infiltration water and were accumulated in the earth's gaps forming lakes with salt-water.

In the past, lakes near to seaside used to form lagoons of Black Sea which, because of alluvium, where separated step by step from the seaside forming a stretchof land between the lake and the sea. [12]

## 3. Salt-water fountains

In most places, the use of salt-water has become a habit, a tradition so that even today there are households in which fine salt is not used in diet, even if it can be found on market. Elders have learned to appreciate the value of salt listening in the childhood the ancestors stories about how hard it was when the access to salt was prohibited or limited. They also learned to handle in the household with salt-water, which was considered better than any salt from market, a precious aliment, a gift of nature. Many of them could not imagine the taste of food or pickles prepared without salt-water.

Due to the importance that salt-water has acquired in the places tradition, in most localities can be found decorated fountains, some of them being locked or guarded even today. In some places, it is also the case of Lueta locality, county Harghita, salt-water is considered an aliment, which is why the fountain and fountain house are very carefully manicured, permanently locked, cleaned every day and is sanctified in the Epiphany day. [13]

There were identified different types of fountains, so that they can be grouped in three categories: *undeveloped fountains*, form of salt-water ponds, dug by locals, from there they take the necessary brine; *partly developed fountains*, which have the appearance of sweet water fountains, sometimes being covered; *developed fountains*, true ethnographic monuments that follows archaic construction techniques of the area, representing living testimony of the tradition and culture of the area.

A salt-water fountain is generally arranged similarly to a sweet water one. After determining the place that the fountain has to be built, in a place where the spring had more flow, a hole with a considerable depth was dig. In some areas, it didn't exceeded three meters because the craftsmen reached the salt rock and so they stopped. Such fountain can be found in Ideciu de Jos, Mureş county. After digging the hole if rock salt was not found, it is inserted gravel to filter the water. From the bottom of the fountain and up to the surface, walls are boarded with oak planks. Between the wooden walls of the well and the earth sometimes is inserted pebble to filter the water that could penetrate inside the fountain. [14]

Removing the salt-water from the fountain was made with wooden buckets that were either provided with some long queues of about 2.5 meters, or were hung up by wooden hooks. The salt-water has a higher density than freshwater, so that it can be found at the bottom of the fountain, reason why the water needs to be agitated before being removed. For this, long queues and hooks were used. Salt-water is highly corrosive and this is the reason why the well, the fountain house and also the fountain inventory (buckets, hooks etc.) were made of wood. [15]

The Moldova Subcarpathian's zone is currently the only one in Europe where salt-water springs which are in close proximity to archaeological vestige continue to be used even today at an unexpected level of intensity. So far, Poiana Slatinei from Lunca (village Vânători-Neamţ, Neamţ county) is the most representative place of salt-water exploitation from Moldova and also a landmark for European prehistory as here were identified three areas of archaeological deposits,

from which, the bigger one is located in the proximity of actual salt-water spring. Archaeological materials fount in this three areas are dated in Neolithic and Chalcolithic. [16]

In 2014, Bistriţa-Năsăud county was enriched with a new monument: an old fountain with salt-water, which locals from Cepari have protected with a massive construction of wood. Ministry of Culture has established a protection zone around the fountain which is in the "La Cărămidărie" ("Brickyard") zone.

The salt-water fountain with house from Cepari village has been included by the Ministry of Culture in the list of historical monument with group B value, according to Official Gazette no. 782/28.10.2014. According to information published by the researchers from Museum of the Eastern Carpathians who have made a study related to salt mining in Transylvania, in many villages it is customary to arrange salt-water puddles as fountains with house – some special wooden structures, like real ethnographic monuments. The one from Cepari is in a very good level of preservation being a massive construction made of thick oak planks which can withstand through the passage of time, once being very carefully cared. However, today it is abandoned, the door is missing and people stopped using it. [17]

## 4. Clasification of salt-water

Depending on the layers that water cross, water can be distinguished by their chemical composition. Besides simple salt-water, can be found iodine, sulfur, sulphate, ferruginous and alkaline-ferrous sources of water. Along the Subcarpathians and in the places where marsh gas and petroleum can be found, besides salt, water also contains iodine and sulfur.

In balneology, *chlorosodic waters* are considered those containing more than 1g/l NaCl (393 mg Na and 607 mg Cl). Mineral waters whose concentration of NaCl is greater than 14 g/l (hypertonic) are considered salty waters, their range being extremely wide. In general, hypotonic, isotonic or easy hypertonic mineral waters that come from mineral springs are usually mixed waters, which contain other solutes and gases (bicarbonate, sulfate, CO2, H2S, etc.). Concentrated salted waters from seawaters, salted lakes or salted water from underground or surface (mines) salt deposits contain mainly NaCl. The concentration of these salty waters vary greatly from 15.5 g/l like it is in Black Sea water to a few tens of grams (40-80 g) salted water reservoir from Băile Govora (Govora Baths) to 70-80 g/l the lake water from Techirghiol and up to very high concentrations that are close to saturation in some saline waters (Ocna Sibiu 230 g/l, Ocniţa 257 g/l, Ocna Dej 260 g/l, Ocna Mureş 266 g/l etc).

Given this wide variety of sources concentrations, origins, association with other ions and gas in the mixed waters, their therapeutic effects and indications in spa cures will be also different, depending also on the mode of administration. Hypotonic, isotonic and slightly hypertonic chlorine and sodium waters (usually the mixed mineral waters) are used in internal cure and inhalations, spraying and gargle. Salted waters, with variable concentrations, are used for external treatment baths in ponds, lakes, tubs, irrigations, eventually inhalations and spraying (those highly concentrated after a prior dilution). [18]
In the foreground as a therapeutic value, are situated salty concentrated waters. The therapeutic effects of external therapy in tanks or of baths with heated salt-water (there are thermal salted waters, for example at Icoana, 57°C and concentration of 65 g/l); or helioterme lakes (Bear Lake from Sovata, Techirghiol, Gura Ocniţei) accumulate the heat effect on one hand, the effect of unloading body weight and hydrostatic push-up force of the salted water on the other hand, which is much greater as the concentration of salt is larger and greatly facilitates physical therapy and therapeutic swimming, with the chemical effects of NaCl on the skin surface and body, after their resorption through the skin. [19] If a patient of 70 kg is immersed in fresh water, he weighs 7.9 kg,

but in salt-water he weighs only 2.8 kg, which favors movements of body in bath. [20]

The main indications of external therapy with salty waters of different concentrations are: disorders of traumatic musculoskeletal, rheumatic degenerative and even inflammatory; peripheral and central neurological diseases; functional gynecological diseases. [12, pp. 26] Also, they can improve musculoskeletal disorders of rheumatic nature, degenerative like spondylosis, hands and feet arthritis. [21]

Crenotherapy with chlorinated-sodium water obviously can use only water with low concentration. Usually are used hypotonic or isotonic water with concentrations between 3 and 10 g/l, or maximum 15 g/l. [22]

In external cures, hypertonic chlorinated sodic waters are used or those which are highly concentrated in salt, usually containing calcium, magnesium and sulfate, as well as iodine and bromine. [23]

After the classification made by M. Sturza since 1950, Romanian sodium chlorate waters are divided into: the salty water of Black Sea (with a concentration of 13-18 g/l) and coastal estuaries from Dobrogea (concentration of 50-90 g/l); salty waters and springs from regions with large amounts of salt (with a concentration of 150-250 g/l); salt lakes from Bărăgan (with a concentration between 16-17 g/l); fossil waters (with a concentration between 80-200 g/l); sparkling waters from volcanic regions, poorly concentrated, the amount of salt existing in them has its origins in the lands with residual salt or in formations with salt deposits.

*Salt-water with iodine* can be found especially in the Carpathian region, in zones with salt deposits. Iodine waters are used mostly in drinking cure for thyroid diseases or Basedow, but also they are indicated in balneology. Waters containing iodine at least 1 mg/l do not usually exist in pure form, the iodinated character is additional assigned to other types of mineral waters: chlorinated with sodium waters (Bazna: 50-70 mg iodine/l, Băile Govora: 50-70 mg/l, Bălţăteşti: 4-5 mg/l, Sărata Monteoru: 30 mg/l, Praid), alkaline mixed waters, chlorinated, sulfated, which are indicated for crenotherapy (the hypo or isotonic from Băile Olăneşti, Călimăneşti, Căciulata). The content of iodine in there waters adds effects that expand indications of cure.

Iodine from the water comes from the sedimentation rocks or has at origins seas flora and fauna of yesteryear. In concentrated salty groundwater, iodine is found with high concentration (40-70 mg/l) and is only used for external treatment. Also, iodine is present in many mineral springs with poor concentration, being used for internal cure. Ingested at the same time with mineral water, iodine exerts its small farmacodina due to its concentration in lymphatic tissue, in thyroid and liver. On digestive mucosa, it exerts an congestive effect and simulates secretions. [24]

Thyroid function is particularly influenced by internal cure with mineral waters with iodine. The cure with iodinated water is indicated in hypofunction loss of iodine, metabolic atherosclerotic diseases, gout and hyperuricemia. In external treatment (baths with mixed chlorinated-sodium and iodine waters), iodine produces peripheral vasodilator effect, antifungal effects at the skin level. They are indicated for patients with peripheral or general atherosclerosis, for patients with uric arthritis and those with dermatological fungal diseases. Baths with salt-iodine water are indicated in degenerative rheumatic diseases, in rheumatism or in peripheral neurological diseases. By influencing metabolic reactions, hydro cure mentioned is useful in therapy of diseases such as gout and chronic intoxications with mercury and plumbum. [25]

*Salt-water with sulfur* contain at least 1 mg H2S, HS, S and thiosulfate per liter or colloidal sulfur complex, takes the form of sulphurous simple or mixed waters (alkaline, carbonated, sodium

chlorate). In sulphurous waters, sulfur is found in several forms (free sulfide hydrogen, sulfhydryl groups, polysulfhydryl acids).

In Romania, sulphurous waters have curative qualities. One of the most important source of sulphurous water is foud in Dâmboviţa county, at Pucioasa. The locality is famous among those with rheumatic and neurological disorders. At Olt valley, Călimăneşti, Căciulata and Cozia sulphurous waters, by different concentration of hydrogen sulfide, make real miracles both in internal and external cure. There are renowned also localities like Băile Govora (Govora Baths), Harghita Băi (Harghita Baths), Băile Bârzava (Bârzava Baths), Băile Boghiş (Boghiş Baths), Olăneşti and the seaside waters from Venus and Mangalia.

Due to the high concentration of sulfur which give them a bad taste, the salt-waters with sulfur can not be used as tablewater, but only as medicinal waters. Sulphurous waters have indication for both crenotherapy, but also in the form of external cure as baths, inhalations and vaginal irrigation due to H2S effects, which is reasorbed through skin and through gastric mucous, upper airway, bronchopulmonary and vaginal.

Sulphurous waters are able to cure many diseases particularly through hydrogen sulfide content, which is the only compound of sulfur that is absorbed into the body through skin, lung and digestive track, being eliminated through skin, intestine and kidney. There waters are indicated in constipation, colitis, hepatitis, diabetes and chronic poisoning with heavy metals (mercury, plumbum, zinc). [26]

*Salt-water with ferruginous character* – in this category can be found mineral waters containing at least 10 mg of iron/liter of water, besides NaCl. The iron from these waters comes from washing igneous or sedimentation rocks, with infiltration water that always contain carbon dioxide. In Romania, there are numerous mineral springs or mixed springs resorts with ferruginous character, which are indicated in internal cure at: Tuşnad, Buziaş, Vatra Dornei, Balvanyios, Lipova, Malnaş-Băi, Miercurea Ciuc, Crăciuneşti Baths, Homorod Baths, Ozunca Baths, Remetea, Sărmaşul, Stâna de Vale, Tămăşeu, Turţi Baths and Vâlcele.

Abroad, ferruginous waters can be found at: Saint Nactaire, Vals (France); Bad Bruckenau, Bad Homburg, Kissingen, Nauheim (Germany); Bukovicza-Banja (Yugoslavia); Passugg (Switzerland); Spa (Belgium); Recoaro (Italy); Bad Weinberg (Austria).

The largest group of ferruginous water is the soda-bicarbonate-earth metals water. Usually, the presence of Fe is frequent in carbonated or mixed water and represents a negative element due to the palatability of these waters, which requires some technical measures that defferrizate mineral waters that are in bottles. Ferruginous waters are unstable due to ions Fe 2+ and Fe 3+ oxidation, hardly reabsorbed in the intestine.

Exclusive indication of carbonated ferruginous mineral water is the blood diseases related to insufficient intake of exogenously iron. [27] Ferruginous waters are prescribed in internal cure, their pharmacodynamic effect relying on the presence of divalent iron (Fe++) easily digestible, metabolic and enzymatically active, provided that the acidity of gastric juice to be normal. Cures with mineral ferruginous water is recommended in secondary anemia, convalescence etc. [28]

## 5. Examples of new development around salt-water sources

In the last years, some resorts have benefited from rehabilitation with money from European funds. Also, private investors have begun to renovate and modernize the network of treatment resorts

existing in Romania.

Less than three kilometers away from Beclean, the *Balneary Park Figa Baths* has become in less than four years a benchmark in spa tourism in Transylvania. Thanks to substantial investments, the authorities managed to attract no less than 145.000 tourists, in the season of 2013. In the communist era and in the early 90s, where today come in three months more than 150 thousand tourists was frequented by peasants who, after a hard day in the field, relax at the beach or in the salty waters made available by mother nature. The mayor of Beclean, did not neglect in his electoral campaign the dream of this area, so Figa Baths entered into a common project with neighbors from Cluj, Cojocna and Toroc, project that received 6.5 million euro funding, of which 1.5 came to Beclean.[29]

Figa Baths spa complex was inaugurated on 25 June 2010 and contain a resort spread over 15 hectares, situated on a valley surrounded by woods. Figa Baths is a perfect place to relax, landscape scene being made for this purpose Here is an oasis of health given that salt-water and sludge properties are similar to those from Techirghiol. [30]

*"Figa Baths are ready to receive tourists, throughout the spring everybody has worked intensively to build a giant pool with fresh water, to clean and prepare the tanks, for the development and maintenance of the beaches, for the preparation of terraces, green areas, flower arrangements and landscape, children's playground and sports fields.(...)Also, bathrooms and toilets were appointed to raise up the standards of resort. It was built a new large patio, where there will be placed tables and chairs, so tourists have enough place to dine in good condition. Beaches were extended, umbrellas and sun loungers were supplemented."* [31]

In addition, there are more options for adults and children like football or tennis, especially designed and equipped with accessories (balls, rackets). Also, there is a sauna, access to the fitness room, the massage rooms, table tennis room and jacuzzi. In the complex there is a medical center if certain health problems occurred. [32]

The largest salt-water spa complex from Romania, with an area of 5200 square meters was opened on 28 June 2014 at *Praid* (Harghita county). The investment worth 1.55 million being made entirely from the salt mine funds. It was developed at the site of an old resort, damaged and closed for several years. It has two swimming pools for children, starting from 60 centimeters depth, which increases gradually up to 90 centimeters and then up to the maximum depth of 1.20 meters. Beach area covers 2478 square meters and stretches along the river, covering also a rooftop terrace of a building that is a part of a whole. Currently, 300 lounge chairs were installed that are not paid separately. [33]

Praid salt-water complex lies near the entrance from the salt mine, at about 200 meters, featuring two outdoor pools (for adults and children) with salt-water, equipped with lockers, showers, beach, bar and fast-food with summer terrace. [34]

In the ground floor and first floor building operates a line of self-service kitchen, a bar, two terrace-restaurants (one uncovered and one covered), while at the ground floor level is a showroom for selling salt-mine products, a first-aid point with medical personnel ready to assist in case of need.

The builder said that Praid salt-water resort *"passes, from the architectural point of view, any construction of gender raised to date in Romania"*. Therapeutic qualities of water are indisputable, water basins are one of the richest from the country in salt concentration, having 220 milligrams of sodium chloride per liter. [35]

## 6. Conclusions

Besides the importance of salt-water sources, another important factor that can influence the development of new treatment and recovery centers it is represented by history. Most resorts with chlorine waters are situated close to large salt deposits like salt mountains, which have either been exploited in the form of salt mine or remained unspoiled by man. Romania is not only rich in resources, but also in cultural and architectural locations. Thus, besides the benefit of the mineral or chlorine waters on health, another factor intervenes: the relaxation awarded by visiting historic sites located either in town or in the middle of the forest. Unfortunately, nowadays, it puts too little emphasis on the preservation of what is old and valuable, on what represents our history and culture. Most of the buildings with great architecture are left in ruins, get to be inhabited by homeless people and then, to be destroyed by our ignorance and indifference.

Many of the resorts that were famous abroad less than one hundred years ago, are lying in ruins today due to the lack of funds needed to improve the treatment conditions. In order not to lose the value of historical monuments, they should be restored first and, if necessary, supplemented by the appearance of new treatment centers. Lately, many resorts have benefited from rehabilitation through projects financed with European funds. In the Regional Operational Program 2014-2020, can be requested funds for infrastructure development of tourist and balneary resorts, for arranging natural sightseeing, for building recreational facilities, such as areas for sports, playgrounds for children, outdoor amphitheatres or others, but also for marketing or promotional activities in order to attract tourists.

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