



FORMASAN - a SANUM Remedy made from Formic Acid

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General Survey of Formic Acid

Formic acid is also known as acidum formicicum or methanoic acid.

This is the simplest of the carboxylic acids, its chemical formula being HCOOH.

Formic acid (Acidum formicicum)
Chemical formula: $\text{H} \cdot \text{COOH}$
Structural formula: $\text{H} - \text{C} \begin{array}{l} \text{=O} \\ \text{-OH} \end{array}$

Fig.1: Chemical formulae of formic acid.

It was first extracted in 1671 by John Ray from the red ant. It is to that fact that this colourless, corrosive liquid owes its name. It can be mixed with water in any proportion. Methanoic acid is relatively unstable and easily volatile; it solidifies at 8°C and boils at 100.7°C. It is a powerful reducing agent. In the presence of oxygen it combusts, forming carbon dioxide and water.

If powerful dehydrating substances (e.g. Sulphuric acid) are added to it, it decomposes into carbon monoxide and water; in higher temperatures - assisted by a catalyst - carbon dioxide and hydrogen are produced. The salts of formic acid are called formates.

Occurrence of Formic Acid

In the life of nature, formic acid occurs both in plants and in animals. They utilise this acid for defence or as a deterrent. A few types of insect are able to spray this corrosive fluid (ants) or inject it via stings (bees). However, jellyfish also use it to poison their prey and, finally, the hairs of the stinging nettle contain formic acid, among

other substances. In the human body, it occurs in tiny traces; here it is produced, along with formaldehyde, for the intermediate breakdown of methanol. Methanoic acid can be metabolised rapidly.

Historical, and Production

As well as the distillation from ants by Ray, the French chemist Gay-Lussac developed a process for the extraction of formic acid from hydrogen cyanide, whilst another Frenchman, Berthelot, synthesised it from carbon monoxide in 1855. In the 1960's, initially, it was simply a by-product of acetic acid production, before its own significance in industry and chemistry was recognised and its synthetic production increased, mainly using Berthelot's process.

Industrial Uses of Formic Acid

In the food industry, formic acid, designated by the E-number 236, serves as a preservative in the production of fish, fruit and vegetables. However, since 1998, its addition has been prohibited in Germany. Formates, in other words the salts of formic acid - sodium or calcium compounds - continue to be used as preservatives, with the numbers E237 and E238. Formic acid is employed in the textile and leather industries for impregnating and mastering garments. As it is very good at killing bacteria, it is used in disinfection and cleaning, as well as combatting the varroa mite in bees. On account of its ready reactivity, methanoic acid is used in the chemical industry as a neutralising agent, and also as a reducing agent, e.g. in soldering processes. Its decalcifying properties are employed in the household, and

likewise in the jewellery industry, where it facilitates the gentle removal of lime deposits on acid-resistant jewels. Formic acid is employed in so-called in vitro mutagenesis, along with the enzyme AP-Endonuclease. And finally, airport runways are de-iced using formic acid, and polyamides in the plastics industry are bonded with its assistance. It is not difficult to see the wide range of applications of the chemical reactivity of formic acid.

Medical Significance of Formic Acid

From time immemorial, ants have been used in healing. St. Hildegard of Bingen recommended them as a remedy for melancholia, which nowadays would be termed neurasthenia. However, from the earliest times, their main areas of application have been gout and rheumatism. For this purpose, the creatures were infused in hot water. The resulting liquid, containing active formic acid, was then added to a bath. Alternatively, a particularly badly affected limb would be placed in a bag of ants, so that the creatures could spray the affected part with their acid. The most common application, however, was the use of spirit of ants, which could be massaged in or applied externally in the case of rheumatic complaints, or taken internally in the form of drops. Between 1850 and 1900, it was only the external use of formic acid that survived as spirit of ants.

It is Dr. Eduard Krull from Güstrow whom we have to thank for rediscovering the internal use of Formic acid. He prescribed his patients subcutaneous injections and

published his experiences for the first time in 1902 in the „Ärztliche Rundschau“ [= Medical Magazine], Munich, under the title „A New Method of Curing Tuberculosis, Chronic Nephritis and Carcinoma“. He later extended his exposition to include other areas of application, these being psoriasis, gout, chronic inflammation of the female genitalia and the respiratory organs (esp. asthma), and neurasthenia. He used aqueous solutions in dilutions of 1:1000 up to 1:100,000, depending on the age of his patients and the stage of their disease, the dosage being 0.1 - 1.0 ml. Interestingly enough, in most cases, he did not repeat the injections within less than three months, with the exception of gout: here the interval was four weeks. Particularly in the case of tuberculosis, patients with an insipid body-odour which, according to his investigations, resulted from a lack of cutaneous excretion of formic acid, he succeeded in raising the excretion of formic acid by means of homœopathic dosage.

He found a keen imitator in Dr. Albrecht Reuter from Greiz who, in 1917, published his own experiences over five years of its use. At that time, and with excellent results, Reuter was using a 1:100,000 dilution, injecting it subcutaneously into the back above the shoulder-blades, into the posterior surface of the upper arm or into the outer surface of the thigh. In cancer cases, he did not achieve a single cure, but the progress of the disease was less severe. However, his experiences with pulmonary tuberculosis were different. Here he reported good success, which could often be recorded following one

single injection. However, he indicated that, should the symptoms get worse, or in stage III of tuberculosis, treatment with Formic acid should be avoided.

His therapeutic efforts with psoriasis and gout were likewise frequently very successful, even though in the case of gout, he reported occasional violent initial aggravations lasting for up to six months. Overall, he achieved the best results in the treatment of the exudative diathesis. According to his exposition, the spectrum extended from bronchial asthma, via pollinosis, skin diseases, stomach ulcers, neuritis, nephritis, muscular rheumatism, anal fissures, chronic otitis, to otosclerosis. Dr. Krull reported that Dr. Reuter warned against using it in cases of nephrocirrhosis. According to Dr. Krull, mild, drawing pains to the side of the navel may occur, as may tenesmus and fatigue; however, Dr. Reuter attributed these to the use of dilutions that were too low. He therefore recommended that higher dilutions should always be used, if one were anxious to avoid such manifestations.

Moreover, Dr. Reuter was able to achieve very interesting successes by giving formic acid as influenza prophylaxis. To this end, he would inject 0.2 - 0.5 ml. of a 1:100,000 dilution. Furthermore, in his publications, Dr. Reuter described how other therapists, such as Klimaczewski of Munich, would have their patients inhale pure formic acid, and thus were able successfully to treat tuberculosis and goitre.

Various authors (e.g. B. Muschlien) describe the homœopathic preparation of formic acid as a polychrest, because it can be used in a wide variety of disease pictures on account of its comprehensive stimulative action in the tissues. The effect may be compared with non-specific protein stimulation therapy. Dr. Krull in particular observed a more vigorous physiological excretion of Formic acid from the patient's body following an injection of acidum formicicum in dilution.

Formica rufa / Acidum formicicum in Homœopathy

In his *Materia Medica*, William Bœricke specifically describes the red ant as „an arthritic medicine“, to be used in all forms of gouty and articular rheumatic pain, especially when occurring more on the right side, worse for motion and better for pressure. Additional indications that he gives are tuberculosis, carcinoma, lupus, chronic nephritis and apoplectic diseases. He particularly emphasises the remedy's ability to prevent the formation of polypi. In the area of the head, the ants, or the Formic acid, are indicated for vertigo, headaches with noises in the ears, and cracking sounds in the ear (left-sided), colds with a blocked sensation, and rheumatic iritis. In the stomach, the red ant causes a sensation of constant pressure in the cardiac area and burning pains with nausea; headaches and a tendency to vomit yellowish, bitter mucus. In the intestinal tract, painful conditions predominate around the passing of stools, accompanied by trembling and shivering. Hoarseness and sore throat, coughing and cutting pains at night in the chest, head and



pleural areas define the symptom picture regarding the respiratory tract. Bœricke also describes pain and rheumatic complaints in the extremities, as well as itching, burning, redness of the skin and urticaria. In all cases, an outbreak of perspiration gives no relief.

According to the „Real Lexicon“ by Dr. Altschul of Vienna, homœopathic preparations of the red ant bring about the following manifestations in healthy provers of the remedy:

- erythematous and itching skin eruptions
- chronic inflammations of the kidneys with albuminuria and stinking urine
- digestive disorders with stinking diarrhoea
- wandering peri-articular or muscular pains
- formation of polypi
- striking weakness, frequent sweats, pressing frontal headaches

FORMASAN - a mixed Potency from the SANUM Company, produced from Formic Acid.

FORMASAN contains equal parts of Acidum formicicum in 6X, 12X, 30X and 200X decimal potencies. It is available in the form of drops

and ampoules. With these preparations, particular honour is paid to the experiences of Drs. Krull and Reuter in the use of formic acid. According to Metzger, the success of the oral dosage is perfectly comparable with that of the parenteral. According to Muschlien and Reuter's experiences, formic acid should not be given concurrently with Stramonium and nitrogen compounds (Kali nit., Nit. ac., Arg. nit., Hydrocyanic ac.), because these immediately cancel out the action.

From the above explanations, a broad palette of symptoms and diseases emerges, and experience shows that FORMASAN may be successfully used in treating these. These particularly include:

- Rheumatism of muscles and joints
- Eczema
- Bronchial asthma
- Allergies

FORMASAN is available from the SANUM-Kehlbeck company in the following forms:

10 and 50 ampoules of 2 ml; drops in 30 ml and 100 ml bottles. The drops contain 50.6 % vol. of Ethanol.

Bibliography

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