

Iodol, a new antiseptic : odourless and without poisonous properties, a substitute for iodoform : German patent no. 35,130 / sole makers Kalle & Co.

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I O D O L ,

A NEW ANTISEPTIC:

ODOURLESS AND WITHOUT POISONOUS PROPERTIES

A SUBSTITUTE FOR IODOFORM.

GERMAN PATENT No. 35,130.



SOLE MAKERS :

KALLE & Co.,
CHEMICAL WORKS,
BIEBRICH-ON-RHINE.



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WE beg to call your attention to the new ANTISEPTIC
"IODOL" (Tetraiodide of Pyrrol), which for all medicinal
purposes is a most valuable substitute for Iodoform, and
refer you to the accompanying Testimonials of its
medicinal use.

KALLE & CO.

CHEMICAL WORKS, BIEBRICH-ON-RHINE,

January, 1886.

IODOL, AND ITS USE IN MEDICINE.

TETRAIODIDE OF PYRROL C_4I_4NH , also termed Iodol, was first discovered by G. Ciamician and P. Silber of Rome. A German patent (No. 35,130) was granted, dating from 8th June, 1885, the sole rights of which patent have been obtained by us.

Iodol, as now introduced into commerce by us, appears as a very fine crystalline powder, of a faintly yellowish white colour. When taken in the hand it feels like French chalk ; it adheres to the skin, on which it may be readily rubbed to form an extremely thin coating. It has no smell or taste ; it is insoluble in water, but easily soluble in alcohol, especially when that is heated ; the solution is quite clear, but of a somewhat reddish yellow colour. On the addition of a little water, the Iodol is precipitated in large needle-shaped crystals, or on the addition of a larger quantity of water it is thrown down as a very fine powder. Iodol in large crystals is not so suitable for employment in the solid form as that in fine crystals. When the alcohol is heated to a higher point, up to boiling, the solution in a short time becomes darker, and finally, black flakes separating, it becomes partly decomposed. This decomposition very readily occurs by overheating the vessel containing the solution, so that the alcoholic solution should be only employed in the cold, or cautiously gently warmed for only a short time on a water-bath. The same precautions have to be taken in drying the Iodol.

Dry Iodol forms a clear solution with warm oil ; the smallest amount of moisture shows itself by a milky turbidity of the solution.

Chemically pure Iodol contains 88.97 per cent of Iodine. When it is heated to above 100° the Iodine is liberated, and the Iodol quite destroyed.

Iodol is employed in medicine for the same purpose as Iodoform ; its effect is the same, but it has the advantage of being odourless, of being harmless when absorbed, and being less irritating to wounded surfaces. It is employed either in the solid form by dusting on the powder, or as an alcoholic solution, to which glycerine is added, or as an ointment or emulsion, or lastly, it may be employed as a dressing fixed on gauze. Further details on this point will be found in the following abstracts of publications.

Further notices of this substance may be expected to appear shortly, since trials are being made of it in a large number of German hospitals, but are not yet completed. The results of these trials will also be subsequently brought before purchasers of Iodol.

KALLE & CO.

BIEBRICH-ON-RHINE, January, 1886.

A NEW ANTISEPTIC DERIVING FROM PYRROL.

BY DR. VULPIUS.

DR. VULPIUS, of Heidelberg, spoke of a new antiseptic in the section of Pharmacology at this year's Naturforscher-Versammlung at Strassburg. He pointed out that none of the antiseptics at present known fulfilled all that was required, and that, consequently, every such new substance which was recommended was of great interest to those concerned in the matter. In this respect the attention of all was directed to the substance termed Iodol which had been prepared by Dr. Silber and Dr. Ciamician, of Rome, and its value proved in the surgical wards by Mazzoni. That surgeon could testify that Iodol has the advantage over Iodoform in the absence of any offensive smell, and that also in the treatment of wounds no poisonous effects ensue with it. But it has proved to be a powerful antiseptic, and among other things acts as a local anæsthetic; moreover, it favours the formation of healthy granulations. Iodol is prepared by a patented process from the ætheric animal oil, by Kalle & Co., of Biebrich. The process consists in the addition of iodine and iodide of potassium to pyrrol (which has been freed as much as possible from other substances), whereby "Iodol," known as tetraiodide of pyrrol, is precipitated.

Iodol is a very fine crystalline brownish powder, which may be heated up to 100° without decomposing; at a temperature above this it gives off vapour, and finally leaves a voluminous ash. It is scarcely at all soluble in water, but is readily so in alcohol; the more so the stronger the alcohol. The addition of water to the alcoholic solution causes a precipitation of the greater part of the iodol, but a considerable amount of glycerine may be added without any cloudiness ensuing. Iodol is also easily soluble in ether and chloroform. It may be recognised by the green colour when dissolved in sulphuric acid, and by the distinct reddening of the alcoholic solution which ensues when it is warmed with nitric acid.—*Trans. from the "Chemiker Zeitung,"* 1885, No. 81.

"IODOL," A NEW ANTISEPTIC.

BY DR. A. WOLFF.

WE referred, at the Naturforscher-Versammlung at Strassburg, to the properties and effects of Iodol. According to observations made by him, Iodol, just like Iodoform, exerts no rapid change in cases of venereal sores; but it shows the same properties (as iodoform) after the sore has been altered by treatment with pure salicylic acid. Hypodermic injections of an oil solution (10 per cent.) into animals (rabbits), caused not the slightest irritation; iodine could be detected in the urine. The administration internally of quantities up to 0.16gm. daily did not have the slightest irritating influence on the alimentary tract; likewise, solutions in oil (0.10 per dose) were readily absorbed by the human subject, without any signs of irritation. As to the value of the preparation as an antiseptic, only further experiments could decide.—*Trans. from the "Chemiker Zeitung,"* 1885, No. 83.

THE EMPLOYMENT OF IODOL IN SURGERY.

BY DR. GAETANO MAZZONI.

ABOUT four months ago I received for trial from Dr. G. Ciamician, assistant in the Chemical Institute of Rome, a new chemical preparation termed Iodol, which, with Dr. P. Silber, he had prepared. It is a yellow or greyish brown crystalline powder, which is almost odourless and quite tasteless. According to the discoverers, it should possess a similar action to iodoform, and its therapeutic influence was examined by me in conjunction with Dr. Rocchi, on some patients in one division of the St. Giacomo Hospital.

So far, two hundred observations have been made; of these I do not of course intend to speak individually; only the effect of Iodol on certain groups of diseases in which it has been used will be briefly described. The

Iodol was employed in substance, or suspended in glycerine, or it was used as an ointment made up with vaseline ; in addition, alcoholic solutions of Iodol diluted with glycerine were also employed, since Iodol is quite insoluble in water.

In venereal affections (chancres, adenitis, and periadenitis), Iodol was used with the best results.

The venereal sore having been washed with water, and carefully dried, was sprinkled over with Iodol powder, and covered with silk protective ; if the chancre was large and very purulent, Brun's wool was also employed ; this dressing was repeated every twenty-four hours. The following observations deserve being called attention to :—After the dressing had been renewed from four to six times, the base of the chancre commenced to granulate, and the edges showed a tendency to cicatrise ; no fresh ulcerations, nor any adenitis in the inguinal region ever appeared, and even commencing inflammation of the lymphatic glands (in two cases) subsided without any special treatment.

In patients who came with wounds which had large openings, with thinned, undermined, and blue edges, the free incisions which are recommended in such cases could be avoided, and the surface of the sore simply sprinkled with Iodol powder. In twenty-four hours a change was noticeable in the character and quantity of the secretion. The ulcer was cleansed with Brun's wool, and after the dressing had been renewed three or four times, it commenced to granulate, and showed a tendency to rapid cicatrisation.

In six cases of inflammation round the glands in the inguinal region, which had large openings, and in which the glands lay exposed, a rapid healing was effected without ever employing any of those operative procedures which otherwise appear necessary in such obstinate affections.

If the patient had not been subjected to any treatment before, we proceeded as follows :—With a tenotomy knife a small puncture was made, and the pus slowly evacuated through the small aperture, then with the aid of a Pravaz's syringe, 2, 4, or 6 grammes of the alcoholic Iodol solution,* according to the size of the cavity, were injected. As a rule the small opening closed too quickly, so that it had to be again opened with a sound, and the operation repeated.

On the average, after six applications perfect healing was effected—*i.e.*, in a period which is very much shorter than that which is otherwise necessary in similar cases.

From the numerous observations which we have made as to the influence of Iodol on extensive ulcers, we are able to give the various results in different forms of ulcerations.

In ulcers where there is a very marked necrobiosis, the good effect of Iodol is very remarkable—the foul smell disappears, the secretion diminishes, and the ulcer changes in a short time to a healthy granulating wound.

In atonic ulcers also the result was likewise favourable, and even after two applications a distinct improvement was to be observed.

On the other hand, Iodol was quite ineffectual in sloughing ulcers where there were marked sloughs ; in these cases we were obliged to discontinue its use, since not only did no improvement ensue, but the disease extended. The cause of this was, I believe, that the Iodol in such cases is washed away by the fluids which are secreted in such quantity, and that in employing alcoholic solutions the Iodol is precipitated and then carried away.

Since we were convinced, from very numerous observations, that Iodol in a high degree favoured the growth of granulations, we have extended its use to various forms of lupus, and to chronic fungus disease of joints.

The Iodol treatment was applied to a patch of lupus on the outer aspect of the thigh of a girl, who also suffered from lupus hypertrophicus of the nose and cheek. Iodol solution was injected into the subcutaneous tissue

* The solution which we preferred consisted of Iodol, 1 gramme ; alcohol, 16 grammes ; and glycerine, 24 grammes. This solution has a faintly yellow colour, and must be preserved in coloured bottles, since it decomposes (after a time) somewhat, if exposed to the light.

round about the patch, and also into the substance of the lupoid patch itself; by this the further extension of the disease was prevented, and the patch became paler and firmer. It is yet too soon to give the further result of the treatment in this case.

In another patient (*Corsia Sisco*, No. 39) who was afflicted with lupus of the upper lip, some lupus tubercles were extirpated, and the small holes filled with Iodol powder. In eight days healing had ensued under the scabs.

As regards chronic fungus disease of joints, the following three cases deserve to be mentioned:—

A fungating process had developed in the left ankle-joint (tibio-astragaloïd) of a young girl, and had persisted for eighteen months; on the outer aspect of the joint was a fistulous opening, through which the sound could be passed deeply among bleeding and painful fungating masses. The small amount of secretion which was formed was thin and ropy.

Very little good effect had been obtained by fixing the joint, compression, and superficial cauterisation. Consequently injections of alcoholic solution of Iodol (at first 3grms., later 2grms.) were made through the fistula; this occasioned a slight reactive inflammation; the secretion, which at first was profuse and purulent, gradually diminished, whilst the fungating masses were replaced by a firm cicatricial tissue. After about a month (after ten injections) the fungating process had disappeared, the joint had recovered its normal movements, and the patient could, under the most favourable conditions, be sent to a sea-side resort.

The second case is that of a youth 15 years of age, who is at present still under treatment (*Corsia Genga*, No. 98). He had a fungating synovitis of the right ankle and adjoining tarsal joints, which for more than a year had withstood all therapeutic treatment, and it appeared to be necessary to perform some operation. The whole neighbourhood of the joint was swollen, painful, of soft doughy consistence, especially on the outer side, where a sound could be passed through a fistula, through fungating masses, into the centre of the joint. Injections of Iodol solution were made into the joint and into the tissues round about, and in the course of a month the inner aspect of the joint had quite recovered, and also on the outer aspect the soft doughy condition is limited to the anterior part.

In the third patient, Professor Durante removed the astragalus, calcaneum, with nearly the whole of the tarsal bones, and resected the ends of the tibia and fibula. An immense hole resulted, which was at first covered with fungating, readily-bleeding masses, and these, despite the use of Iodoform, gave rise to a foul-smelling secretion. On 9th May Iodol was used for the first time, and in three days the cavity had markedly diminished in size and was lined by healthy granulations. At the third dressing the cavity was filled with 3grms. of Iodol powder, and special attention was given to the possible appearance of poisonous effects; but no signs of these appeared, although the presence of iodine in the urine could be readily demonstrated.

When admitted into our division of the hospital, the patient soon began to convalesce, though here and there fungating masses appeared, which were kept in abeyance by repeated injections of Iodol solution. Although the patient has not yet entirely recovered, I have hopes that he will do so entirely, because Iodol has the property of causing the fungating tissue to be replaced by healthy granulations, or to be transformed directly into cicatricial tissue.

Something still remains to be added as to the aseptic and antiseptic properties which, in my opinion, this new preparation possesses; however, at present I cannot definitely answer this question, on account of insufficient material for observation. We must, however, point out that not a single case of erysipelas or diphtheria broke out among any of the patients treated with Iodol, although they are endemic in our hospital, and that in cases where, even with careful sublimate treatment, diphtheria appeared, it quickly ceased on the application of Iodol.

I wish to remark, in order that the properties of this new preparation may be understood, that Iodol has a slightly irritating effect, so that several hours after its application the wound has a whitish, very tenacious coating, which protects the layer of granulations beneath.

I cannot close the present preliminary communication without expressing the hope that my own observations on the therapeutical properties of Iodol will also be soon confirmed by others, since I am quite convinced that this preparation will be most serviceable in surgery.—*Berliner klinische Wochenschrift*, 1885, No. 43.

IODOL, A NEW ANTISEPTIC.

PRELIMINARY COMMUNICATION FROM THE SURGICAL CLINIC OF PROFESSOR CZERNY, OF HEIDELBERG. BY DR. GEORG BENNO SCHMIDT.

LAST autumn a new antiseptic in the form of a powder was sent to the surgical "klinik" here for examination; it was to be used in the place of Iodoform, which, on account of its often observed poisonous effects, is employed by medical men with a certain amount of justifiable fear, and which is but little appreciated by patients on account of its penetrating smell. Iodol, or, as chemists term it, tetraiodide of pyrrol, is a pale brownish, almost odourless powder. The first prepared specimens contained a small quantity of impurities, under the influence of which and of light the powder became somewhat darker, and gradually came to emit a faint odour somewhat reminding one of naphthol. The Iodol at present manufactured by Kalle & Co., of Biebrich-on-the-Rhine, is quite pure, and undergoes no change on exposure to the air. The first publications as to its mode of preparation and its use are to be found in the Transactions of the Naturforscher-Versammlung at Strassburg in 1885; by Dr. Vulpius (Heidelberg) and Dr. Wolff (Strassburg); also in the *Berliner klin. Wochenschrift*, 1885, No. 43, by Dr. Mazzoni, who made the first observations with it in the division of the hospital in Rome set aside for syphilitic cases.

The solubility of Iodol in water is 1:5000, a point which limits therefore the manner in which it may be employed. It is soluble in three times its weight of alcohol; a very small addition of water to this alcoholic solution occasions a milky turbidity, whilst the addition of glycerine does not cause the precipitation of the Iodol. It is soluble in about equal parts of ether, and to the extent of 15 per cent. in warm oil.

The observations which we can up to the present time mention, were made in that part of our hospital where septic cases are treated—i.e., cases where there was a large suppurating surface, ulcers, fistulas, etc. Iodol was used in the following forms:—

1. As a powder, just as we use Iodoform, it being sprinkled on the surface of the wound; over this was placed a compress moistened in a solution containing sulphate of alum and acetate of lead. The amount of Iodol used was less by this method, since it more readily passed into the crevices, and formed a thinner layer on the surface of the wound. After the dressing was removed we saw that Iodol, unlike Iodoform, formed no crust with the secretions. The secretion was odourless, but not altered apparently in amount; the growth of granulations was good, not so active as when Iodoform is used, and the cleansing of necrotic surfaces of ulcers satisfactory.
2. The second method in which Iodol was employed was a solution of one part of Iodol, 16 parts of alcohol, and 34 of glycerine; with this tampons were saturated, which were introduced in cases of sloughing carcinomas of the uterus and rectum, and by this means a tolerably good deodorisation of the secretion was obtained.

Furthermore, we injected the solution by means of a syringe with a long tube into abscess cavities, which had been emptied and scraped out (for instance, in bursitis præpatellaris suppurativa), and effected by this means a relatively rapid closure of the cavity. Fistulas of a simple nature, and which did not act as paths of escape for secretions from more deeply seated foci of inflammation, were healed by a similar treatment.

3. Iodol gauze, prepared in the same way as iodoform gauze, was very serviceable for employment as tampons for cavities in wounds, and favoured an active growth of granulations. Of Iodol collodium, and Iodol vaseline, which we had made, we cannot speak for want of sufficient experience.

In no case did we observe any poisonous effects, and never could iodine be detected in the urine; however, neither of these points can be considered sufficient in settling the point in question, since the Iodol came in contact almost exclusively with granulating surfaces—not with recent wounds—and in such the clefts in the connective tissue are less numerous into which the Iodol could penetrate.

As regards the principle of the action of Iodol, it is probable that as in the case of Iodoform, very small amounts of Iodine are constantly being liberated at the place where it is applied, and that on this the local therapeutic effect of the remedy depends. The nascent condition of the iodine seems to render possible the further combinations to form iodide of potassium and iodide albuminate, under which condition it is absorbed. The liberation of the iodine from Iodol, especially when this is in the form of Iodol gauze, may be more certain than in the case of Iodoform. Iodol gauze dressings show, after remaining on for a single day, a distinct separation of iodine in the gauze, and also a marked brown colouration in the neighbourhood of the wound; very probably this liberation of iodine is occasioned by the warmth of the body, though possibly also by a fermentation occasioned by the secretions from the wound. That the former plays a part may be seen from the fact that iodine is liberated when Iodol gauze is heated in a test tube, and also a development of iodine may be observed in the gauze when it is kept at a temperature of 39° C. for twenty-four hours on a water-bath.

Although Iodol is far from being perfection as an antiseptic, for on account of its very slight solubility in water, and also on account of its present high price, many would prefer another drug, nevertheless we cannot refuse to admit the great advantages of its mildness of action, its power of deodorising secretions, the absence of the formation of crusts, and its being almost completely free from odour. The greatest advantage would also accrue if, in addition, its employment should be unattended with any poisonous results.

Further observations, especially on recent wounds, will give us other facts.—*Trans. from the "Berliner klinische Wochenschrift,"* No. 4, 1886.

OPINION OF PROF. BARDELEBEN, BERLIN, ON IODOL.

IODOL was employed in the surgical wards (of the Königl. Charité-Krankenhaus) by Prof. Bardeleben in the following manner:—

1. In the form of powder, applied directly to the wound; or a dressing (cotton wool) was impregnated with it, and that was applied to the wound.
2. A certain quantity of gauze was impregnated with 5 per cent. its weight of Iodol in alcoholic solution, and after this had been dried, it was employed as a dressing.
3. The solution (Iodol 1, alcohol 16, glycerine 34) mentioned by Mazzoni was prepared, and employed as an injection for fistulas in cases of caries of bone.

Iodol in the form described under headings 1 and 2 was employed for a large number of recent wounds of the scalp, and recent operation wounds after removal of lymphatic glands from the inguinal region, and after removal of diseased bones or fragments of bone from the extremities, and also for some old ulcers connected with bone which remained after such operations.

In all these cases, Iodol proved to be capable, after a single application, of preventing for a long time, even for eight days, the decomposition of the secretion from the wound.

No signs of irritation nor any evil results were observed.

No separation of any blackish flakes was noticed, at least to any degree that would cause any inconvenience. On the other hand, a marked odour of free Iodine was noticeable in a few days in the case of the Iodol gauze, which was stored away from the air; from this liberation of iodine, the gauze assumed a gradually increasing brown colour. From the employment of the solution mentioned under heading 3 no good effects were noticed on the diseased parts.

In addition, I would add the following: You observe that on all essential points I am as satisfied with Iodol as Prof. Czerny. I should be very much obliged to you if you would send me a sample of the new substance for further trial. I shall be able to give you then the result much sooner than before, since I now know that certainty of action, and absence of evil results, may be relied on under all circumstances.

Berlin, 24th January, 1886.

TESTIMONIAL FROM DR. GLASSNER, OPHTHALMIC SURGEON IN CASSEL.

I HAVE employed the Iodol which you kindly sent me in my ophthalmic practice, and have arrived at the following results: Iodol acts like Iodoform in cases of ulceration of the cornea, when applied in the form of powder; it acts better than Iodoform for clearing up opacities of the cornea (when applied as an ointment). Iodol appears also to have had a favourable effect on some cases of granular lids; phlectenular processes were cut short by the application of a 2 per cent. Iodol ointment. In the employment of the powder, the irritation is at the commencement greater than is the case with iodoform, but it disappears very soon again. Injuries in the neighbourhood of the eye heal very well with Iodol powder. I could not observe any local anæsthetic effect of the drug. As regards my own special work, I can say that iodol has an equally good effect as Iodoform. If we consider that in the case of the former there is none of that odour which clings to everything, there can be no doubt that Iodol will soon replace Iodoform.

Cassel, 4th December, 1885.

TESTIMONIAL FROM DR. VON HOFFMANN, OPHTHALMIC SURGEON IN BADEN-BADEN.

IN the past three months I have made observations in the Eye Hospital of Baden-Baden to ascertain whether Iodol could not be substituted for Iodoform, on account of the offensive penetrating odour of the latter. I can state that in almost all cases where up to the present Iodoform has been employed, Iodol is equally efficacious.

The clearing up of infiltrations of the cornea appears to even proceed more rapidly than under the use of Iodoform. The amorphous powder was sprinkled on the conjunctiva, and on the infiltrated and ulcerated parts, several times a day. The eye was then closed and bandaged up, so that the action of the drug was a continuous one. Likewise, it had a marked effect in causing the regressive changes in the granulations in granular conjunctivitis. No difference could be seen between the effect of Iodol and Iodoform in plastic operations. The insufflation of Iodol powder effected a rapid cure in two cases of ozoena, which had withstood previous treatment for a long time.

If we study the feelings of the patient we shall doubtless choose this apparently equally efficacious remedy.

In any case, Iodol has the preference on account of its odourless character, and will doubtless be adopted in many hospitals where Iodoform, on account of its objectionable smell, has been abandoned.