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Dissertation on iodine

George Anson Moody
Yale University.

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XIV.

Dissertation

on

Iodine.

By

George Anson Moody,

of North Haven, Connecticut,

Candidate for the Degree of Doctor in Medicine.



Iodine

Among the great variety of new remedies which claim the attention of the medical profession at the present day, Iodine appears to me, not unworthy of their special ~~attention~~ notice. Adapted in its application to a variety of diseases, and being capable of combination, with a great variety of substances, it bids fair to be one of the most valuable aids to the physician, in alleviating the woes of his fellow-beings.

Iodine was first discovered by Courtois, in the year 1811 or 12 a salt-petre manufacturer of Paris. Clement first described it in 1813 and it was soon after more fully investigated by

Davy and Gay Lussac). It received the name of Iodine from the greek ιωδης violet colored in allusion to the violet color of its vapor, Courtois first discovered it in the mother waters of Soda, obtained from sea weed, and it was found afterwards to exist, in nearly all marine plants, in many of the marine mollusca, in sea water, in mineral waters, in some minerals and in some of the lower grades of animals.

It may be obtained by evaporating the liquor remaining after the crystallization of Soda from the liquor of the ashes of the marine plants, until most of the soda and common salt have crystallized out; then add a little dilute sulphuric acid to precipitate sulphur and to disengage muriatic acid, then evaporate to dryness, the saline mass remaining will contain Iodine if any was present in the materials. To this mass contained in a tubulated retort furnished with a tubulated receiver add half its weight of Sulphuric acid, a brisk effervescence

will take place when the Iodine will come over in vapor and be condensed,

Iodine is an opaque, bluish black, scaly, crystalline substance, with a metallic lustre, an acrid taste, easily raised into a state of vapor by the application of heat. The vapor is of a beautiful violet color, odor of Chlorine, but less pungent, like Chlorine possessed of bleaching properties. It stains the skin yellow, which gradually disappears—

It is scarcely soluble in water, requiring 7000 times its weight, to dissolve it. Soluble in Ether & Alcohol. Its solubility in water is much increased by the addition of certain salts as the Chloride of Sodium Nitrate of Ammonia, or Hydriodate of Potassium. It combines with most of the non metallic and nearly all the metallic bodies forming when the combination is not acid the compounds called Iodides; some of which are used in medicine, as the Iodide of Potassium Mercury Zinc Iron &c.— Iodine may in most cases be detected when in combination, by heating, when the peculiar violet vapor will rise, but when this cannot

be made evident, it is unerringly detected by starch which produces with it an insoluble compound of a deep blue color. This test is so delicate as to indicate its presence in 450,000 times its weight of water. To render it free when it happens to be in combination with salts a little Nit Acid must be added to the solution suspected to contain it.

Iodine has been occasionally adulterated with animal charcoal and the peroxide of Manganese. The presence of these substances may be detected by heating the suspected substance when the Iodine will rise in vapor and leave the other substances behind. It may also be adulterated with water. This fraud is detected by compressing the Iodine between the folds of blotting paper. In this ~~state~~ moist state, it is unfit for Pharmaceutical preparations.

Therapeutical Properties—Locally applied it acts as an irritant, staining the skin of an orange yellow causing itching, redness, desquamation. If the vapor of it is inhaled; it produces cough with heat of the air passages, and an unpleasant sensation in the head. Taken internally in large doses, it acts as an irritant to the coats of the stomach, causing restlessness, burning heat, palpitation frequent pulse violent priapism, copious diarrhoea excessive thirst trembling emaciation and occasional syncope.

In small medicinal doses, it often palliates, and even removes disease without changing perceptibly any of the functions of the body. Pereira states that in a case which came under his observation, of Chronic mammary tumour. Iodine was administered daily for twelve months, without any perceptible change except that the patient was unusually thin during the period.

In some instances it is said to increase the appetite whence it has been called a tonic.

In some instances it is said to increase the peristaltic motion, while in other cases it has the effect to constipate. More than one third of the patients treated by Lugol experienced a purgative while Gendrie & Maunson observed that it constipated.

It stimulates the secretory organs increasing the quantity of fluid secreted, producing what Pereira calls a Liqueficient effect. Lugol declares it to be a diuretic, all the patients under his care who had made use of it declared that they passed water more copiously. Said in some cases to have acted as an Emenagogue.

Several cases are upon record, where it is said to have caused salivation; although there are others in which it was administered to check profuse salivation from mercury, with benefit.

It is said to have a tendency to the surface producing diaphoresis, also in some instances to have caused the absorption of the mammary gland and wasting of the testicles. A disordered state of the cerebro-spinal system has been induced.

by it, causing headache, giddiness stupor &c—
A specific effect on the skin is sometimes produced besides the diaphoresis above mentioned Dr Vogel gives an account of a Lady 28 yrs of age of a yellow complexion, who from the internal use of Iodine suddenly became brown, Stedman says that in scrofulous patients it improves the condition of the hair and scalp. Red hair having assumed a chestnut brown under the long continued use of the Iodine internally—

Some have ascribed to this remedy aphrodisiac properties, In some cases the long continued use of this article has given rise to a disordered state of the system called Iodism or Iodic disease. The symptoms are, violent vomiting & purging, with fever, great thirst, palpitation rapid and extreme emaciation, cramps small and frequent pulse, occasionally with dry cough, and terminating in death.

As to the Modus Operandi of this medicine, it is believed that whether taken internally or applied externally, it is taken up by the absorbents and

carried through the system, proof of which may be found, in its having been detected in the Urine sweat saliva milk & blood—

Therapeutical Applications The first experiments made with this remedy were upon goitre and of all the remedies yet proposed for this disease, this appears to have been the most successful, Hence we may account for the efficacy of burnt sponge in this disease, Boindet was the first to try it. He gave it in the first instance, in the form of tincture, and he remarked that in about a week from the commencement of its use, the skin over the goitre became less tense, the substance of the tumour softer, the particular portions of the gland became more distinct & separate from each other, and less & less hard, untill gradually a diminution was perceptible. Frequently the goitre disappeared in the space of from six to ten weeks under the continued use of this remedy. Its external application

was often combined with its internal with good effect. Bayle gives a summary of cases treated by several physicians in which it appears that of 364 cases treated with Iodine 274 were cured. Dr Copland remarks that of several cases of this disease which have come before him since the introduction of this remedy, ~~not~~ one has occurred which has not been cured or greatly relieved.

Scrophula is another disease in which it has been successfully employed. It is stated that Crindel was the first to introduce this remedy for this disease. But Doct. Neanson was the first who tried it on an extensive scale. He treated upwards of eighty cases of Scrophula & Scrophulous Ophthalmia by the internal exhibition of Iodine, sometimes combined with its external application, and in a large proportion of cases in which the remedy was persevered in, the disease was either cured, or ameliorated, the general health of the patients being at the same time improved. Lugol Physician to the St Louis Hospital Paris made an extensive trial of this remedy. He treated with Iodine alone in

17 months 109 scrofulous patients. 36 were completely cured 30 quitted the hospital with marked improvement and at the close of the year 39 were still under treatment. In four cases only the treatment was ineffectual. Among the cases which he has given, we find Tubercular Scrofula, Scrofula of the Mucous Membrane especially ophthalmia, cutaneous scrofula, Scrofula of the cellular tissue, and Scrofula of the bones -

16 Baudelocque physician of the hospital des enfans. reports that of 67 girls of the age of from 4 to 16 troubled with scrofulous affections treated with Iodine, in which the disease had existed for a considerable time varying from 10 months to 9 yrs, 15 were completely, 14 so much improved as to indicate speedy recovery, 13 appeared less benefited but still sufficient to warrant hopes of recovery, 5 exhibited little & 20 no amendment at all. It has been recommended, and employed with success in scrofulous affections of the knee joints. -

Syphilis. - It has been found serviceable in Syphilis and the healing of old syphilitic ulcers. Dr. Martini of Subeto reports that he has found this remedy very

serviceable in many cases of ulceration of the throat whether syphilitic or not. A woman 40 years of age applied to him with an ulcer of the throat of two months standing. The appearance of the sore was very suspicious, it was excavated, hard and painful. The Iodine was given and nothing else. In the course of a week the ulcer was very much improved, and speedily afterwards it healed up— The woman's health which before for some time had been precarious, was much improved under the use of the remedy, and at the same time, a leucorrhoea which had existed for several years ceased. He also reports other cases who had suffered from genuine syphilis. In one the throat exhibited several irregular excavations with elevated edges, In another the Velum was eaten away & third had been treated with mercury and a variety of other remedies to no effect, to all of whom the Iodine was given and the result was most satisfactory, the ulcerations healed up rapidly, and the general health of the patients was much improved. In some cases the medicine required to be

persevered in for a length of time before its salutary effects were observed, and on no occasion has he found any evil to result from its use -

For Bubo this remedy applied externally is one of the best known, & writes in the provincial Medical Journal after stating several varieties of treatment for this affection, says, "the best treatment of all is to paint over the enlarged glands night and morning with a strong solution of Iodine in the Hydriodate of Potassium". "The effect of this" he adds is almost magical. If the Bubo suppurate he recommends an injection of Iodine in Hydriodate of Potassium Iodine 4 grs Hyd Potassa 5 grs water 8 oz -

In enlarged prostate gland an Iodine suppository has been used with benefit, and the Iodide of Potassium has been administered successfully in the same disease, A medical student lately told me that he was taking the Iodine daily for enlarged prostate with strictum with evident advantage. It has been used in ovarian tumours, and Chronic enlargement of the uterus with success. Pereira in his Matéria Medica gives an account of a case

in which the uterus was of opious hardness and of so considerable size as nearly to fill the whole of the pelvis. Yet in six weeks the disease had given way to the use of the Iodine and the catamenia were restored. In the Guy's hospital reports are several cases given by Dr Ashwell - of hard tumours of the uterus, successfully treated by the use of Iodine, in conjunction with the use of mild diet and occasional bleeding. Besides the internal use, it was also used in the form of an ointment, composed Iodine grs ~~xv~~ Iodide Potassium ii Spermaceti Oint. zj of which a portion about the size of a nutmeg was introduced into the vagina and rubbed into the affected cervix for 10 or 12 min every night. Fabricated by an oint of Iodine & mercury an enormous degeneration of the ovaries which gave rise to two tumours of the size of the head.

Iodine is highly recommended for Dropsies For Hydrocephalus it has proved highly efficacious. Evanson and Mauressell in their work on diseases of Children recommend it for this disease.

Dr Christie relates an interesting case in the London and Edinburg Journal of Science, of a child 8 yrs of age in which symptoms of acute Hydrocephalus, were present, After having made trial of the various remedies employed in this disease for 2 or 3 days without success but rather an increase of the symptoms, he concluded to try the Iodine and prescribed as follows,

R Iodide Potassium grs XVI

Iodine - - - " IV

Aqua ℥i

Dose table spoonful every 4 hours

The head was directed to be rubbed with a weak oint of the Beniodide of Mercury -

Under this treatment the patient amended and finally recovered,

It has been used also in ascites with success -

In Leucorrhoea it has been employed with benefit

Lugol observed that in several cases in which he prescribed Iodine for Scrophula obstinate Leucorrhoea had been cured, A German Physician relates

case of a lady 27 yrs of age who had Leucorrhoea

of 3 years standing, who he treated with Iodine in the form of an injection of a diluted tinct with complete success in a short time.

This remedy has been employed to check salivation. Krufeland informs us that in 17 cases it was employed with benefit. The severe smarting, the tumefaction of the glands of the mouth and the profuse flow of saliva ceased after 3 or 4 days of use of it, and the mercurial sores often healed up at the same time.

The dose usually given was 2 grs at first in the course of the day, and it was increased to 4 grs in the following formula

℞ Iodine grs ʒ
Solve in Spts Vini ʒij
Aqua Cinnamonum ʒij
Simple Syrup ʒss
M Dose ½ table spoonful every 6 hours & increase

1) As an external application in various diseases it has proved highly efficacious

In Letter Turnerman used others found it very serviceable. A Physician in Alabama states that for several years he has been accustomed to treat the Herpes Circinatus

with the Tinct of Iodine with the happiest effect,
and says he does not recollect a case which he
has not radically cured

Brehme succeeded in curing rapidly & completely
a case of inveterate porrigo favosa, and ophthalmia
depending thereon by an oint of Iodine -

As an application to Erysipelas it has proved ben-
eficial, A Lady about 40 yrs of age applied to my
Father with Erysipelas affecting both hands -

The hands were much inflamed, tumid, painful
exquisitely sensitive to the touch, so that she was
unable to move her fingers in the least. The

Tinct of Iodine was applied, of the strength of
ʒi to ℥j. The pain was relieved almost instantly
the tumefaction and tenderness subsided, and
after two or three applications, at intervals of a
day or two the disease was entirely removed -

For Chilblains I have seen it applied with great
benefit relieving the itching and soreness almost
immediately

I saw the Tinct applied upon the foot of an old
gentleman which was greatly inflamed. The

inflammation commenced upon the great toe, and gradually extended untill it had reached above the ankle. The parts were very much swollen highly inflamed of a purple color in spots, so that apprehensions were had of its taking on mortification. Upon the application of the Iodine Tincture, the pain swelling & inflammation subsided, and by several applications the disease was completely removed.

Many other cases, of various diseases, might be mentioned in which it has been used with alledged success, but enough have been cited to show that it is a remedy of some efficacy and well worthy of our trial.

Preparations and Administration

Iodine is rarely administered in substance, but is generally combined with some preparation which will render it soluble in water, more commonly the Iodide of Potassium. In the administration of Iodine care should be taken to avoid gastric irritation, and therefore it should not be given upon an empty stomach. Exhibited immediately

after a meal its topical action is considerably diminished. especially if amylaceous substances have been taken, as potatoes bread pudding, sago tapioca &c., with which it forms an Iodide of Starch. Iodine in substance has been given in form of pill in doses of $\frac{1}{2}$ gr but this mode is objectionable and now is not generally resorted to,

Sincth Iodine / Iodine \mathfrak{zj} Rect Spir $\mathfrak{z\text{ij}}$ Dublin, U.S.P. orders Iodine \mathfrak{zj} Rect Spir $\mathfrak{z\text{ij}}$. This is chiefly used as an external application, Dose internally $\text{m}\mathfrak{v}$ to $\text{℥}\mathfrak{ss}$. It is used mixed with 4 or 5 parts of Soap Liniment - as an emulsion.

Liquor Iodine Compositus, U.S. Iodine $\mathfrak{z\text{vi}}$ Iodide Potas $\mathfrak{z\text{ij}}$ Aqua Distillas of Dissolve, Dose 20 gr

Iodidum Amyli, Iodide of Starch, Rub 24 grs of Iodine with a little water, and gradually add \mathfrak{zj} of finely powdered starch, dry by a gentle heat and preserve the powder in well stopped bottles, Dose $\mathfrak{z}\mathfrak{ss}$ gradually increased

Unguentum Iodini, Iodine \mathfrak{z} i Prep lard \mathfrak{z} i
or Iodine 20 grs Alcohol 20 minims Lard \mathfrak{z} i Rub
the Alcohol and Iodine together then add the
lard untill thoroughly mixed, Employed as a
local application to tumours &c.

Iodide of Potassium, made by mixing
Iodine Carb Potash + Iron filings + water
The action of the substance is similar to that
of Iodine and is used in combination with
it which it renders soluble in water—

Iodide of Iron, made by mixing Iodine \mathfrak{z} ii
with Iron \mathfrak{z} i water \mathfrak{ss} . It is indicated as a
tonic and resolved in cases of debility accompa-
nied with a soft and relaxed condition of the
solids with paleness of the skin—

Biniiodide of Mercury, (Red oxide of Mercury)
 \mathfrak{ss} Mercury \mathfrak{z} i Iodine \mathfrak{ss} Alcohol \mathfrak{qs} . It is a
powerful Irritant & Caustic used chiefly
as an external application in obstinate ulcer-
ations opacity of the Cornea obstinate ophthalmia
Cancerous affections &c Dose internally $\frac{1}{16}$ gr gradually
increased to $\frac{1}{4}$ gr. There are various other preparations

which I need not mention

In case of poisoning by Iodine the first object is to evacuate the stomach, For this purpose vomiting is to be assisted by the copious use of tepid diluents & demulcents especially by those containing amyglaceous matter or starch wheat flour Sago &c or in case these can not be had milk or white of Eggs, Magnesia is also recommended, Opium also have been found useful



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