# CHLORATE OF POTASH AS A THERAPEUTIC AGENT.

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A novel classification of the drugs of the pharmacopœia would be into those that *are* held by us in sufficient repute, and those that are *not*. Such a classification, I repeat, would be novel, perhaps Utopian, yet at the same time, as a means of drawing attention to some drugs which have undeservedly fallen into obscurity, not without its usefulness. In chlorate of potash I distinctly recognise a drug belonging to the latter class. Textbooks, as a rule, take little notice of its constitutional action, and that only in a cursory and off-hand way. It is mentioned chiefly as a topical application.

I need not take any notice of this crystalline salt *as such*, only to say, that in it we have, with the addition of strong hydrochloric acid, a ready means of obtaining chlorine gas, often very useful and convenient for purposes of minor disinfection. I would, however, before entering upon its therapeutics proper, preface a few remarks with regard to its solubility and best solvent. In textbooks the solubility of chlorate of potash in cold water is variously stated. Squire, I find, puts it at 1 in 12, Garrod at 1 in 16, and in Pereira's *Materia Medica* it is stated that 100 parts of water, at 32° F., dissolve 3·5 parts of chlorate of potash, and at 59° F. 6 parts. Now, from practical experience I would say, that all these numbers are overstated; its more correct solubility in cold water I would put as being from 1 in 20 to 1 in 24. For practical purposes, however, it is sufficient to bear in mind that one drachm of the salt will dissolve in three ounces of cold water. In hot water it dissolves readily; but unless for weak solutions this should never be used as its solvent, for if the solution be a strong one, approaching or over-reaching its solubility in cold water, it will on cooling throw out the chlorate of potash in the crystalline form, and when cooled down actually leave more chlorate of potash undissolved than if cold water alone had been used. We have, therefore, by using hot water, two evils to contend with—less of the salt permanently held in solution, and that in the crystalline form, and so with great difficulty held in suspension. The practical inference from this, therefore, is, that cold water is its best solvent, whether the solution be a strong or a weak one, pro-

vided that the salt be previously finely powdered in a mortar, this fine powder (if the mixture be a strong one) being much more easily held in suspension than the crystals by simply shaking the bottle. I may also add that the addition of dilute hydrochloric acid* assists the solubility of chlorate of potash in cold water; and at the same time liberates a small quantity of chlorine gas, which will be held in solution if the bottle be well corked.

As to its therapeutic action, this may be conveniently divided into local and constitutional.

1st. *Local.*—In aphthæ of the mouth and ulcerative stomatitis there is no more useful topical application than the glycerinum boracis of the Ph., combined with chlorate of potash. This same is also an excellent application to the fauces, by means of the probang sponge, in cases of diphtheria (acting as a sedative and antiseptic); also in those cases where the throat is too tender to admit of the use of gargles, or where gargles cannot be relied upon, as is the case with children. As a gargle in the sore throat of scarlet fever, I have found nothing more useful than a combination of chlorate of potash, biborate of soda (borax), and glycerine. This same combination, in the form of a gargle, will also be found useful in follicular tonsillitis, and all other forms of inflammation or ulceration of the tonsils or pharynx, *not specific.*† In the spongy condition of the gums of scorbutus, &c., a mouthwash of chlorate of potash, dissolved in acid infusion of roses, serves admirably.

In chronic affections of the bladder it has been recommended as an injection.

Lastly, as when given internally, it is excreted (partly at least) by the kidneys as chlorate of potash, would it be too great a stretch of the imagination to suppose that part at least of its action on the urinary tract is topical? Might not its topical action, in this way, assist in stimulating the functions of the kidneys in low fevers, diphtheria, &c., and help to explain its great usefulness in these cases? Whether this be the principle or not, I am at present strongly inclined to think that I have found chlorate of potash useful in some cases of chronic cystitis, and that alone, or combined with other recognised remedies, I think it worthy of a further trial.

2nd. *Constitutional.*—Taken internally, chlorate of potash

* The liquor ferri perchloridi and tinct. ferri perchloridi of the Ph. both contain a small quantity of free hydrochloric acid.

† If combined with the *appropriate constitutional treatment*, it also forms (with infusion of cinchona as a vehicle) an excellent gargle in syphilitic affections of the mouth and throat.

appears in the urine as such, and not as chloride of potassium,* which in textbooks is generally stated as being fatal to the theory of its supplying oxygen to the blood. Unless it can be shown, however, that all the chlorate of potash taken appears in the urine in this way (and I am not aware that this has been done), I cannot by any means reconcile this theory with clinical experience. Its great usefulness in low fevers, and many cachectic conditions, seems to me to indicate that chlorate of potash *has* the power of yielding some life-giving element to the blood, most probably oxygen. That its presence in the blood exerts a powerful stimulating action on the mucous membranes is a point undisputed.

The following are the diseases in which it will be found most useful:—

In the first place, I would refer to its great value in diphtheria, especially if combined with the other details of treatment indicated, as given by Dr. Wade of Birmingham, these being —the protection of the entire surface of the body with flannel clothing, the administration of copious diluents to keep the kidneys in action, the administration of potassium iodide in two, three, or four-grain doses every two or three hours, and, lastly, the giving of chlorate of potash in five or ten-grain doses. If this treatment be begun early, it is often highly successful.

In the marasmus of children, given in two or three-grain doses three or four times a day, in milk, it often succeeds when nothing else will, and should always be tried. In aphthæ of the mouth, and ulcerative stomatitis, the healing action is promoted, if given internally as well as applied topically. The same holds true in non-specific ulceration of the tonsils or pharynx. Here, however, it is often useful to combine it with iron. Combined with the tincture of the perchloride of iron, it may be almost regarded as a specific in bad cases of scarlet fever. Combination with the same preparation of iron aids its efficacy in the treatment of erysipelas.

In all fevers of a low type, especially in bad forms of scarlet fever, typhus, typhoid, and diphtheria, given freely in the form of a bland drink, it is invaluable as a means of keeping the kidneys acting freely. This may be partly due to its stimulating action on the secreting cells, through its presence in the blood, and partly, as before suggested, to its local action.

In the hæmorrhagic diathesis it will also be found highly useful. Here it is generally necessary, however, to combine it with arsenic, or the tincture of the perchloride of iron,

* A fact first pointed out by Pereira.

or both. In some chronic affections of the mucous membrane of the uterus it will also be found useful, alone, or combined with other remedies.

In anæmia, where it is our wish to improve the quality of the blood, arsenic and the preparations of iron will be found to give more satisfaction if combined with chlorate of potash. In purpura it forms a useful adjuvant to steel, arsenic, or such medicines as may be more specially indicated.

I have, lastly, to place chlorate of potash in the rank of specific remedies. That it is a specific in ptyalism was first pointed out, I believe, by Herpin, a German physician. With the aid of chlorate of potash we can cure a case of syphilis requiring mercury,* without producing salivation at all; and this is at all times an evil, and by no means wanted. In private practice especially, this fact speaks for itself, as we all know how closely salivation is connected, in the public mind, with the administration of mercury, and how the latter is detested. The chlorate of potash in these cases may be given combined with the mercury, or separately, it does not matter which. It is desirable also, when a patient is taking mercury, that the teeth and gums should be kept free from tartar. For this purpose the tooth brush should be used three or four times a day, a solution containing chlorate of potash being the tooth wash.

Having ranked chlorate of potash among specific remedies, perhaps I could not do better than leave it there. May it attract others, and so aid in approximating medicine to the exact sciences! Perhaps on nothing will this depend more than the continued discovery of specifics.

* In purely secondary syphilis I consider mercury a specific remedy, and the only remedy we have. The preparation I have found most useful is the bichloride, in doses of from 1-16th to 1-8th of a grain in solution. In the stage between this and the purely tertiary symptoms, a combination of mercury and iodide of potassium is indicated—either the bichloride in conjunction with potassium iodide, or what is better still, the green iodide in 1 grain doses in the form of pill, combined with 1-4th of a grain of opium if it causes gastro-intestinal irritation. For the purely tertiary symptoms potassium iodide (in doses of not less than 10 grains) is just as much a specific as mercury is in the secondaries. I would add, that this I believe to be in the main the teaching of Professor Macleod of Glasgow, and having had good opportunities of trying it, I would most humbly beg to vouch for its philosophy, practicality, and soundness.