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ON THE USE AND ADMINISTRATION OF TANNIC ACID IN VARIOUS DISEASES.

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DURING the last six years, I have been in the constant practice of prescribing TANNIC ACID, usually termed Tannin, in various diseases. I was led to its employment, by a knowledge of the potency of many substances into whose composition it largely entered. It recommended itself likewise by its bitter and intensely styptic taste. Its remarkable chemical effect upon gelatine, and the alleged wholesomeness of the tan-yard, in some measure also contributed to cause me to make trial of this agent. In all the diseases, and, with two or three exceptions, in all examples of the diseases in which I have employed it, marked advantage has attended or followed its use. I can conscientiously say, that, on the whole, the results have been such, in respect to promptitude, certainty, convenience, and safety, as I have not procured from any other remedial agent. This testimony in its favour is given only after due analysis, and deliberation; and I am so convinced of its correctness, that I have decided upon continuing to consider and to use Tannic Acid, as one of the most efficacious and valuable articles in the stores of the pharmacist. It is to record the grounds of this decision, and to point out the conditions and circumstances under which it is useful, as well as to indicate the most advantageous mode of employing it, that the present communication is designed. The facts to be related, it is thought, possess some value, and appear to justify a more extensive and general employment of this remedy, than it has yet obtained.

The remarks are arranged under the following heads:

I. HISTORY AND PROPERTIES OF TANNIC ACID.

II. ITS PHYSIOLOGICAL AND THERAPEUTICAL EFFECTS.

III. MODE OF ADMINISTRATION.

I. HISTORY AND PROPERTIES OF TANNIC ACID. Tannic Acid has been received into the human stomach since the first days of medical

science, but only as an ingredient in numerous bitter, astringent, and aromatic medicines, and in some vegetable articles of diet. Unknown as a separate proximate principle, it doubtless contributed much to the efficacy of the medicines, into the composition of which it entered. In these substances, Tannic Acid is combined with other ingredients, some inert, some possessing properties different from those of Tannic Acid, and others closely resembling it in their effects. The first ingredients must be useless, and would unnecessarily and inconveniently increase bulk at least, in some forms for administration; the second would, in most instances, injuriously modify or interfere with the action of the Tannic Acid; and the third, though auxiliary and useful, could seldom be present in that proportion which would best suit the exigencies of different diseases, ages, complications, and stages.

Since the discovery of Tannic Acid as a distinct vegetable proximate principle, many years ago, according to Dr. Murray,¹ by Seguin, and particularly since the researches and experiments of Pelouze, this agent, in its pure form, has been employed occasionally, to a limited extent, in the practice of physic. Dr. Burns,² of Glasgow, mentions, in his work on Midwifery, that it has been recommended in chlorosis in doses of *one hundred grains* daily! Dr. Pereira³ says: "given to dogs to the extent of twelve grains, it caused constipation. In doses of two and a half grains, it produced constipation in the human subject." Dr. Todd⁴ has recently recommended it as a powerful astringent; and Dr. Garrod⁵ has lately given some account of its employment. I mentioned its utility in goitre⁶ connected with anæmia, in a paper on that subject. I have reason to believe that it is employed by several practitioners in London; and I have been informed by an eminent pharmacist, that it is now more frequently prescribed than formerly. For years past, I have recommended it to the notice of my professional friends. Nevertheless, there can be no doubt, that the use of Tannic Acid by the profession is not so general, as with advantage it might be. Even those who employ it, do so, I believe, in only a very few diseases; and in these, for the most part at least, merely as an astringent. Few practical hints are to be found in medical works, for the administration or application of this potent medicine. While Dr. Pereira⁷ informs us, that twelve grains produced dryness of the mucous membrane of the bowels, and a collection of hard fæces in the colon, and that it may be given in doses of three grains, we learn from Dr. Burns (as already stated), that some have recommended it in doses of a hundred grains daily. It therefore appears, that a few practical suggestions on the subject are yet a desideratum.

Tannic Acid exists in a great number of vegetable productions. It is present in tea, and in many culinary vegetables. It is the combination of the Tannic Acid in these articles of diet with the peroxyde of iron, which causes the dark colour of the alvine evacuations of those taking

¹ MURRAY'S System of Materia Medica. Fifth edition, p. 321.

² BURNS' Principles of Midwifery. Seventh edition, p. 147.

³ PEREIRA'S Elements of Materia Medica, p. 736.

⁴ MEDICAL GAZETTE, 1849.

⁵ LANCET, 1849.

⁶ LONDON JOURNAL OF MEDICINE, June 1849.

⁷ PEREIRA. Op. cit. p. 736.

the salts of that metal. And it is owing to the absence of this acid in the aliment, that iron, when exhibited to children fed solely on milk diet, fails to blacken their evacuations. The articles which contain Tannic Acid in greatest abundance are certain medicinal substances,—catechu, kino, galls, and oak-bark. Numerous barks likewise contain Tannic Acid in large quantity; these are the chestnut, the willow, the ash, the sycamore, the larch, the birch, the blackthorn, the hazel, and many others, of all which it is the “true principle of astringency.”¹ It is chiefly prepared from gall-nuts, (which afford forty-five or fifty per cent.)

Tannic Acid is of a lively yellow, or canary-colour, inodorous, somewhat bitter, and intensely styptic to the taste. It is soluble to a very considerable extent in water, and in alcohol, not highly rectified. Its solution slightly reddens litmus. The alkaline carbonates it decomposes; and with most metallic solutions it throws down precipitates, which are tannates of their respective bases. Dissolved in water, if not exposed to the atmosphere, it may be long preserved without change; but if otherwise, it soon decomposes, absorbing oxygen, becoming turbid, and depositing gallic acid.² Tannic Acid is by no means expensive. It may be had, in a pure form, for less than three shillings per ounce.

II. PHYSIOLOGICAL AND THERAPEUTICAL EFFECTS OF TANNIC ACID.

1. As an ASTRINGENT, I have found Tannic Acid exceedingly efficacious, certainly as much so as any other agent, vegetable or mineral, that I have ever employed. It has equalled the salts of lead, copper, and zinc, without producing any of those poisonous effects which are liable to follow the free use of the salts of the first two metals.

Internal Use. In the *chronic bronchial catarrh* of weakly and elderly persons, unconnected with disease of the heart or great blood-vessels, and attended with copious and debilitating expectoration, the administration of Tannic Acid by the mouth, in doses of one, two, and three grains, two or three times daily, has greatly and gradually abated the secretion, relieved the frequent cough, and improved the strength of the patient. In the second stage of *pulmonary consumption*, viz., that of softening, when bronchial catarrh has been present to a large extent, weakening the patient, causing frequent cough, and disturbing sleep, the same results have followed, and have greatly contributed to the comfort and welfare of the sufferer. But in pulmonary disease, the greatest amount of benefit has obviously been derived when large cavities have been present in the lungs, the walls of which have thrown out large quantities of purulent matter, occasionally mixed with blood. In such cases, the discharge has been effectually controlled, and the rate of tear and wear of the system obviously restrained, without the induction of oppression or other evils.

In *chronic diarrhœa*, which had resisted the ordinary treatment by chalk, opium, and regulated diet, and was not dependent on obstructive disease of the heart or liver, Tannic Acid, in a solid form, has proved

¹ PARIS, J. A., M.D., *Pharmacologia*, p. 151.

² SIMPSON, Professor J. Y., in 1843, recommended gallic acid in menorrhagia. He suggested whether the antihæmorrhagic properties of some of our common astringent drugs, do not depend upon their tannin becoming converted into gallic acid within the body. *Edinburgh Monthly Journal*, July 1843, p. 661.

of surprising efficacy. In cases of severe disease, depending on an irritable weakly mucous membrane, I have not known of one failure; and of those examples connected with chronic inflammation and disorganization of the mucous membrane, only two proved beyond the influence of this remedy. These two cases occurred during the last autumn, while cholera was prevalent; and the disease of the mucous membrane was extensive. The complaint in one of the examples was of long standing, and the patient had been addicted to habits of intemperance. But it was not Tannic Acid only that failed; the salts of copper, iron, lead, and zinc, in large doses, proved to be of no more avail. In this form of disease, Tannic Acid was administered in the form of pill, in combination with opium.

In *leucorrhœa*, unconnected with inflammatory action, I have found Tannic Acid efficacious in restraining the discharge, and in increasing the strength of the patient. The aqueous solution, combined with a small proportion of dilute nitric acid, was the form usually employed in these examples of disease. In *menorrhagia*, not dependent on a plethoric state of the system, or on local congestion, it was also serviceable, administered in the same form.

The excessive *sweating in phthisis*, and in other diseases running on to a fatal termination, has been usefully restrained by the use of Tannic Acid, combined with dilute nitric acid; and the habitual cold damp upon the skin of soft, weakly constitutions has been corrected by the same means. I have had no opportunity of testing the virtues of this remedy in the *hæmorrhagic diathesis*; but I am strongly disposed to believe they would be found very considerable, conjoined with other suitable means. I believe it would prove serviceable in *albuminuria*, dependent on chronic disorganization of the kidney, and not associated with obstructive disease. When the egress of albumen results, as I believe it often does in no small degree, from reduced tone and elasticity in the organ, and is not (as in a great majority of cases) a wholesome outlet necessary for the relief of the circulation, Tannic Acid offers the promise of benefit. Such a case, however, I have not lately met with, and consequently have not had an opportunity of testing the treatment.

Local Application. In the form of aqueous solution, used as a gargle, Tannic Acid has been most useful in correcting relaxation of the throat. Sponginess and hæmorrhage of the gums have been greatly controlled by a lotion of Tannic Acid, and by the application of the dry powder. By this means, loose teeth may be retained for a time, and the impediment to articulation thereby prevented, which would result from their removal.

In *prolapsus ani* I have prescribed Tannic Acid, dissolved in water, as an injection. This remedy is particularly indicated, when the disease is associated with great relaxation of the solids. Applied to *hæmorrhoidal tumours*, free from inflammation, in the form of a fine powder, mixed with lard, it would doubtless prove more efficacious than galls, the usual remedy. It is assuredly due to the Tannic Acid which it contains, that *uva ursi* proves serviceable in *catarrhus vesicæ*.

In *gonorrhœa*, chronic or about to become such, Tannic Acid, applied externally as a lotion, has proved serviceable. In the latter mode, it has induced no smarting, although the parts have been tender, and

though it has been applied with little intermission for several days. It is as a *local* astringent that Tannic Acid produces the most obvious effects, as Dr. Garrod has remarked.

Of Tannic Acid as an astringent, I have merely further to say, that it is of special excellence, as an external application to the skin, when such a remedy is required. I have found it of extraordinary efficacy, when reduced to a fine powder, mixed with lard, and applied to the skin. The parts soon acquire a healthy aspect; very little of the smarting or pungency is experienced, which so generally results from the use of the salts of alumina, lead, zinc, or copper. I have found it far superior to gallic acid. By way of testing their comparative powers, I lately applied an ointment of gallic acid to one spot of psoriasis, and one of Tannic Acid to another. The strength of both was the same. The spots were of old date, and had resisted much treatment. In the course of two days, the spot to which Tannic Acid had been applied, was all but healthy; that for which gallic acid had been similarly employed, was more inflamed than before. The gallic acid had caused smarting, and brought away the protecting scales. This treatment was adopted merely to test the comparative powers of the two acids, and not as curative practice. Astringents, if they be applied in psoriasis, must be used only as subsidiary to other treatment.

2. As a **PEPTIC** (*πεπτω*, coquo), Tannic Acid is very efficacious. This I soon found, while employing it as a pure astringent. Symptoms of dyspepsia disappeared under its use, the appetite increased, flatus and sense of distension were abated at the same time; and, in several instances, the bowels, far from becoming constipated, acquiring a more healthy tone, actually became more free. A lady affected with phthisis, who has been under my care for three years, during which time she has taken Tannic Acid alternately with cod-liver oil, complained, very lately, of loss of appetite while taking the oil. The morning dose of the oil was replaced by Tannic Acid, combined with dilute nitric acid; and the result was a very striking restoration of the appetite. With such obvious improvement in the condition and action of the stomach, it is reasonable to believe, that one of the results is the formation of a more perfect chyle. The action, as a Peptic, is in accordance with the statement of one of the best writers on *Materia Medica*. Dr. Pereira says, "Administered in moderate doses, they (astringents) promote the appetite, assist digestion," etc.¹

3. As a **HISTOGENETIC**, in *promoting the genesis*, and in *improving the quality of the blood*, Tannic Acid, it may be inferred from what has been stated above, would probably prove effective. But that it is really so, I have the evidence of improved complexion, greater fulness of the blood-vessels, increase of strength, buoyancy of spirits, and improved secretions, in numerous examples of anæmic and other diseases, in which this agent has been long employed.

The *formation of structures in the young*, I have reason to believe, is subserved, to a valuable extent, by the long-continued administration of Tannic Acid, in moderate doses. It is nearly six years since I began to prescribe this remedy in cases of curvature of the bones in children,

¹ PEREIRA. Op. cit., vol. i, p. 80.

with soft shafts and enlarged epiphyses. The number of cases placed under this treatment, while I was Physician to the Northern Dispensary, was considerable; and not a few occurring in private practice were similarly treated. The general health was improved in all. The secretions, in many cases exceedingly offensive, were greatly corrected. In the course of a year or two, an obvious improvement in the shape and form of the bones was manifest. The curve was reduced; and the heads of the bones had lost no small amount of their disproportionate prominence. I have lately seen two or three children, presenting no appearance of having suffered from this affection of the bones, who, some years ago, really were deformed, and who were put under the influence of Tannic Acid, and also, it is true, of suitable regimen. In most of these examples of disease, when they came under my care, the urine contained an undue proportion of lime. This continued to be the case, at least for some time, even under the use of Tannic Acid, though perhaps not to the same extent. If Tannic Acid really possess the power of correcting the tendency to rickets, or of staying the progress of this affection, it cannot be through any astringent action on the kidney arresting the exit of an undue quantity of lime, which is only a sign or consequence of the disease, and not its cause. It must act by invigorating the general health, and by imparting a more healthy character to the formative processes, by virtue of which lime and other mineral ingredients in the blood are more forcibly attracted to, and fixed in, the osseous structure. Further evidence of the power of Tannic Acid to improve the formation of tissues, has been afforded by the increase in the volume and firmness of the soft parts of children placed under its operation, which I have frequently observed.

4. In connexion with HETEROLOGOUS FORMATIONS, Tannic Acid has been largely employed in my practice; and as far as I can judge, and with every wish to be impartial, I believe it has been operative, to a great and valuable extent, in arresting or retarding their growth. Almost every case of incipient tubercular deposit in the lungs, which came under my care, either at the Northern Dispensary or in private practice, some years ago, was treated, at least in part, with Tannic Acid; and I have been agreeably surprised to find that not a few of these very patients are now alive, some apparently not nearer the grave than at that time, and some in really improved health. I was consulted in the case of a young lady, five years ago. The apex of the right lung was solidified with tubercle, and the patient had rapidly deteriorated. Sir James Clarke saw her with me, and Dr. Watson, at a later period, also visited her. Tannic Acid was employed, after the more ordinary practice had been adopted; and though other means have been in use on different occasions, I attribute much of her present health to the acid. That lady's lung is still solidified, the respiration is bronchial, and percussion is absolutely dull; but the general health is equal to that of the other members of the family, and permits of her going abroad.

A young lady from Bow consulted me. She was considerably emaciated, had frequent cough, with much muco-purulent expectoration occasionally mixed with blood; percussion at the left clavicle was dull; the vocal resonance was augmented; the pulse was rapid; there was much sweating; and the patient, in short, was rapidly breaking up. With

counter-irritation, opium, and Tannic Acid combined with dilute nitric acid, very great improvement soon took place. The flesh increased in volume, the cough and expectoration greatly abated, and the respiration became easy. After this, Tannic Acid was made to alternate with cod-liver oil. She mended so much that, without asking my advice on the subject, she married soon after. I saw her subsequently, and found her still improving. That lady is now in fair health, and, I understand, was safely delivered of a fine child some weeks ago.

An elderly single lady lost her brother five years ago. She was deeply afflicted, and became, immediately after this loss, the subject of tubercular deposit in the apex of the right lung. Percussion was very dull over the affected lung, and there was occasional cough; but the chief symptoms were breathlessness, sweating, and rapid pulse. Dr. Watson saw her, along with me, three or four years ago, and recommended dilute nitric acid, etc. I subsequently gave her Tannic Acid, and, with intermissions, she has taken it up to this time, generally in combination with nitric acid. Cod-liver oil has likewise been employed sometimes at one part of the day, while Tannic Acid has been given at another, and sometimes for a week, alternating with the acid. That lady is still under my care. She is very little worse than she was three years ago. The tubercles have softened, but there is no cavity. The chief alteration for the worse, has been a moderate increase of the emaciation, of the cough, and of the expectoration. She is able to walk out, except in bad weather; talks with energy, has a vigorous appetite, and sleeps well. She takes, at present, Tannic Acid in small doses, (for she has a somewhat irritable stomach,) with dilute nitric acid; cod-liver oil is still occasionally employed. She has no occasion for opiates or purgatives.

Mrs. W. had solidified lung, much tenacious muco-purulent expectoration, occasional spitting of bloody fluid, and frequent cough. Small portions of a dark brown substance, apparently separated lung-tissue, were occasionally brought up. They had an extraordinary corrupted foetor, with something of the odour of sulphuric ether or of naphtha. Counter-irritation and opiates were employed. Tannic Acid, dissolved in infusion of gentian, and combined with dilute nitric acid, was administered, with the result of improving the general health, and of checking the foetid expectoration.

The deposition of tubercular matter, it is reasonable to believe, may be retarded by the use of a remedy which improves the health both of the solids and fluids of the body. The surrounding lung-tissue may be so beneficially acted on, as to reduce the tendency to inflammation and to disorganization. With respect to malignant heterologous formations, I have had no opportunity of seeing them under the influence of this remedy, except as an external temporary application; but I think it is consistent with what we see in other diseases, to believe that the cells of cancer may be checked or retarded in their growth by its long-continued administration. The normal formation of nutritive processes may receive such an impulse, as effectually to interfere with the almost monopolizing growth of malignant disease. With a more healthy condition of the capillaries, and a more perfect quality of blood, may we not hope for some benefit? It may be allowed, with this view, under such desperate circumstances, to administer a remedy which, if not effectual against the

major evil, will at least improve the general health ; and that without the production of any ill consequence, worthy to be called by a higher name than that of inconvenience.

5. As a NERVINE of a lasting character, I have found Tannic Acid useful in several cases of nervous debility, languor, and excitability. These distressing conditions have been relieved ; and the benefit, in one or two examples, has been permanent. Under the use of moderate doses of this medicine, I have known even the symptoms of weakly organization,—or, as I have thought, of impending softening of the brain, such as flightiness of speech and manner, impatience of attention or of application, hasty judgments, weakness and unstable gait,—to lose not a little of their prominence. It has always, however, been my object to guard against depending on this or any other such remedy, where there has been good reason to suspect the presence of inflammatory action, even in a subdued form. When thus used as a Nervine, Tannic Acid should generally be combined with camphor, hops, or hyoscyamus. The shower-bath has been employed, and the secretions have been attended to, at the same time. Thus exhibited, I believe that Tannic Acid, by improving the natural galvanic battery, if our brain and nerves may be so figuratively designated, will really, in many cases of feeble volition and muscular action, produce not a little of that benefit which has been sanguinely looked for from galvanism and electricity, and which, when obtained, has been so fleeting,—at least in my experience.

III. MODE OF ADMINISTRATION OF TANNIC ACID. For administration, Tannic Acid is well suited. It possesses no great bitterness, is free from odour, and does not induce nausea. A little sugar or syrup will suffice to cover all unpleasantness. It is perfectly safe, and may be continued for months without any evil effect. In moderate doses, it does not reduce the secretions below the healthy standard. It may be administered at all hours,—before, or during, or after meals.

Tannic Acid may be employed alone in the treatment of disease ; but it is capable of exercising its virtues harmoniously with other remedies. The use of this medicine does not preclude the employment of iron, cod-liver oil, and other such means ; but, on the contrary, I believe it will make them more available to the patient. It may be given at one time of the day, and the other remedies at another ; or a week or a fortnight may be given alternately to each medicine. Tannic Acid, moreover, may be advantageously combined at the same moment with other means. It may be prepared with bitters and aromatics, or conjoined with astringent wines.

For diseases of the mouth, Tannic Acid may be dissolved in water : three or four grains to the ounce of water make a strong styptic lotion. It may be reduced to a fine powder, and dusted over the parts. Mr. Morson has prepared a lozenge, which is well adapted for the mouth and throat. Each lozenge contains about half a grain of Tannic Acid. Some have had added to them essence of cayenne, the more to fit them for relaxation of the fauces and glottis. For the stomach, the aqueous solution is well adapted ; and, when a pure bitter is required, some infusion, such as that of gentian, may be used instead of water. When it is intended to influence the bowels, Tannic Acid is suitably exhibited

in the form of pill; and as circumstances indicate, in combination with opium or other remedies. If we desire it to enter the circulation, or to act quickly, at a distance from the stomach, on some internal part, the form of solution or powder should be employed. As a styptic for the rectum, uterus, vagina, or urethra, the aqueous solution, used as an injection, will generally prove most serviceable. For local skin diseases, requiring an astringent, Tannic Acid may be advantageously used, either as a lotion, or in the form of ointment. As, however, the application is really effective, it will be well to attend, at the same time, to any requirements that the general system may demand. Reduced to a very fine powder, I have found that Tannic Acid may be inhaled into the lungs and air-tubes. It has produced no irritation or cough, when tolerably well managed. I have not had much experience of it in this form; but I believe that a cautious trial might be made of it in cases of disease of the lungs and air-tubes, in which the local application of a non-irritant styptic is indicated.

The dose of pure Tannic acid must vary according to the circumstances under which it is employed. For urgent disease, such as hæmorrhage from the stomach, bowels, or lungs, five to ten grains should be used every few hours. For chronic fluxes, wherever situated, two or three grains, given twice a day, will generally suffice. When the general improvement of the health is simply desiderated, one or two grains, two or three times daily, are enough, but the remedy should be long continued. For children afflicted with rickets, half a grain to one grain answers well, given night and morning.

Tannic Acid is contra-indicated in hæmorrhages and fluxes, wherever situated, which are only the relieving of an obstructed circulation, or of inflammatory or congestive action. It is, under such circumstances, calculated to do mischief. In obstinate constipation of the bowels, when circumstances render a lax state necessary, Tannic Acid is contra-indicated in large doses, as a general rule. Irritability of stomach and gastritis are liable to be aggravated by Tannic Acid.

Several preparations of Tannic Acid have been carefully prepared, at my suggestion, by Mr. Morson, the eminent pharmacist, of Southampton-row. These preparations are the tannates of quinine, cinchonine, alumina, bismuth, and lead. They are all coloured, possess more or less the styptic taste of Tannic Acid, and are inodorous. I have not yet had time to make sufficient trial of them, so as to be enabled to report at present upon their virtues. I shall now only hazard an opinion that they, as well as Tannic Acid itself, will be found, upon full trial, to possess very considerable power, and to form valuable acquisitions to the resources of the physician, wherewith he may render himself more formidable to disease, and still more serviceable to the sick.

Park Street, Grosvenor Square, December 1849.