

CHAP. IX.

OF DECOCTIONS.

THE power of water as a solvent, is, like that of all other chemical agents, increased by heat. Hence, in general, the active matter of vegetable substances is more completely extracted by boiling them with water, than by mere infusion, either cold or warm, the residuum in the one case being found more inert than in the other.

It is not to be concluded, however, from this fact, that the decoction is proportionally more active. On the contrary, though the water extracts the active matter of the substance, it is often much injured in the operation: in few cases is the decoction equal in power to the quantity of the substance from which it is prepared; in many it is much impaired; and in some it is totally lost, the decoction itself and the residual matter being both nearly inert.

This change is often owing to the dissipation of the volatile principles of the substance operated on. All the essential oils are volatilized at the temperature of boiling water. It is evident, therefore, that substances, whose virtues depend wholly or in part on their essential oil, must be injured by this operation: for this reason, aroma-

tics are always useless additions to decoctions; and the aromatic flavour of many active substances is also lost in this form of preparation.

But there are many cases in which the virtues of medicines are injured by decoction, in which we cannot ascribe the injury to the mere dissipation of their active principles. Opium, bark, and ipecacuan, for instance, are much weakened by boiling in water; yet, when the operation is conducted in close vessels, so as to collect the water that is evaporated, that water is not found to be strongly impregnated with the active matter of the substance operated on. The distilled water of opium has been given to the extent of six ounces, without exerting any great narcotic effect; and the distilled water of ipecacuan, though it proves emetic, is much less so than the simple infusion. Since, then, the active matter is neither to be found in the fluid which is evaporated, nor in that which remains, it is evident that it must have been destroyed in the operation, by decomposition of the principles on which it depended. It is accordingly found that some such change is induced. When a decoction is strained, so as to be obtained transparent, and is subjected anew to boiling, it acquires a deeper colour, becomes turbid, an insipid substance being gradually formed, which is deposited. This change may be owing, either to the re-action of the elements of the vegetable matter being favoured by the humidity, and the high temperature, so that they enter into new combinations, or to the action of the air upon it imparting oxygen. There have

been experiments brought in proof of this last circumstance taking place in some cases, especially in the decoction of Peruvian bark, oxygen being absorbed, combining with the extracto-resinous matter, and forming an insipid substance. This in particular is affirmed by Fourcroy. And it is farther rendered probable by the experiments of the younger Saussure, who found that extractive matter, in a humid or dissolved state, exposed to the air, was precipitated after a few days in an insoluble state, and oxygen was absorbed; carbonic acid was also formed; and he concluded, from the results he obtained, that, while part of the carbon of the vegetable matter is abstracted by the action of the oxygen of the air, part also of its oxygen and hydrogen combine and form water, so that the residual matter has an increased proportion of carbon. These changes will be favoured by a high temperature: they are those, therefore, probably that take place in decoction, and impair or destroy the powers of the vegetable substance; though it is also possible, that chemical changes may arise from the re-action of the elements of the vegetable matter itself, independent of any action of the air.

From these observations, it is evident, that decoction can seldom be a proper form for the administration of medicines. The pungency and aromatic flavour, on which part of their virtues depends, and which renders them at least more grateful, must always be impaired or lost, and their more important virtues must often be equally injured.

It is accordingly a form which is not now often applied to active remedies.

Decoctions, like infusions, are extemporaneous prescriptions. They cannot be kept ready prepared; as in a few days they are injured, and run into the acetous fermentation. They can, however, be prepared much sooner than infusions; the boiling not requiring to be continued in general for more than ten or fifteen minutes. They ought to be strained while hot, as, on cooling, a portion of the dissolved matter is frequently deposited, which is as active as that which remains dissolved, and this precipitate ought to be mingled with the liquid by agitation, when the dose is to be taken.

DECOCTUM ALTHÆÆ OFFICINALIS. Decoction of Althæa.

“Take of Dried Althæa Root bruised, four ounces; Raisins freed from their seeds, two ounces; Water, seven pounds. Boil to five pounds; put aside the strained liquor until the impurities have subsided, and pour off the clear liquor.”

The gummy part of vegetables is less injured by decoction than any other. In this decoction, therefore, all the powers of the althæa root are obtained, and it is under this form that it is used. The decoction is taken as a demulcent, to the extent of two or three pounds in the day, in ne-

phritic complaints, in ardor urinæ, and sometimes in catarrh.

DECOCTUM ANTHEMIDIS NOBILIS, *vulgo Decoctum Chamæmeli sive Commune.* Decoction of Chamomile, or Common Decoction.

“ Take of the Dried Flowers of Chamomile, one ounce; Caraway Seeds bruised, half an ounce; Water, five pounds. Boil for a quarter of an hour, and strain.”

This decoction is used only as an enema, and as a fomentation. When applied to the former purpose, the effect it may produce is to be ascribed principally to the water; in the second, the vegetables are not more useful, except as retaining longer the heat and moisture when applied to a part.

There is a similar preparation in the Dublin Pharmacopœia, under the name of DECOCTUM CHAMEMELI COMPOSITUM, in which half an ounce of the flowers of chamomile and two drachms of fennel seeds are boiled in a pound of water. It is designed for the same purposes; and as an enema it is rendered more active, in the preparation named ENEMA CATHARTICUM, by dissolving in ten ounces of it an ounce of manna, and half an ounce of sulphate of magnesia, adding an ounce of olive oil. When to this are added two drachms of tincture of assa-fœtida, it forms the preparation of the same Pharmacopœia named ENEMA FOETIDUM.

DECOCTUM CINCHONÆ OFFICINALIS, *vulgo Decoctum Corticis Peruviani*. Decoction of Peruvian Bark. (Decoct. Cinchonæ, *Ph. Lond. Dub.*)

“Take of Peruvian Bark in powder, one ounce; Water, one pound and a half. Boil for ten minutes in a covered vessel, and strain the liquor while hot.”

The resino-extractive matter of Peruvian bark is altered by decoction; hence the reason of the directions given in the Pharmacopœia under this preparation, the boiling not being continued longer than ten minutes, as in this time the active matter, it is supposed, will be as fully extracted as it would be by longer boiling, and the decoction being performed in a covered vessel to exclude as much as possible the access of the air, to the chemical agency of which the change in the extractive matter has been supposed owing. The liquor is ordered to be strained while hot, as it holds dissolved a larger portion of the resinous matter than it can retain in solution when cold. Hence, after having been strained, it becomes turbid as it cools, depositing a reddish precipitate. This ought to be mixed with it by agitation when the dose is to be taken. The addition of a little acid causes it to remain dissolved, and where this can be prescribed with propriety it may be employed.

Decoction of bark is used in those cases which require the free administration of the remedy, but in which in substance it sits uneasy on the stomach. The dose is

two or three ounces, taken as often as the stomach will receive it.

DECOCTUM DAPHNES MEZEREL. Decoction of Mezereon.

“ Take of the Bark of the Root of Mezereon, two drachms; of Liquorice Root bruised, half an ounce; Water, three pounds. Boil with a gentle heat to two pounds, and strain.”

A compound decoction, prepared from guaiac wood, sarsaparilla, sassafras, mezereon and liquorice, had been highly celebrated, under the name of Lisbon Diet Drink, for its efficacy in the treatment of symptoms connected with syphilis, particularly thickening of the ligaments, affections of the bones and periosteum, and obstinate ulceration. Dr Russel, from a series of experiments, concluded, that the mezereon is the ingredient on which its activity depends; and this decoction, in which the liquorice serves merely to cover the pungency of the mezereon, has been substituted for the more complicated composition. It is used in the same cases, sometimes also in cutaneous affections, the dose being from four to six ounces twice or thrice a-day. In a large dose, it is liable to excite nausea.

DECOCTUM GEOFFRÆE INERMIS. Decoction of Cabbage-Tree Bark.

“ Take of Cabbage-Tree Bark in powder, one ounce; Water, two pounds. Boil with a gentle heat to one pound, and strain.”

This decoction is the form under which this medicine has been usually administered, the bark in substance being too violent in its operation. In the West India Islands, the decoction has been used as a very effectual remedy in worms, especially the lumbrici. The dose given is two ounces to an adult; if this occasion nausea, griping, or tenesmus, which it sometimes does, these symptoms are relieved by a dose of castor oil. In this country it has not been much employed.

DECOCTUM GUAJACI OFFICINALIS COMPOSITUM, *vulgo*
Decoctum Lignorum. Compound Decoction of Guaiac.

“Take of Guaiac Wood Shavings, three ounces; Raisins, two ounces; Sassafras Root cut, Liquorice Root bruised, of each one ounce; Water, ten pounds. Boil the water with the guaiac wood and raisins, on a gentle fire, to five pounds, adding the roots towards the end of the boiling; then strain without expression.”

This decoction derives its virtues principally from the guaiac. It acts as a diaphoretic, and has been used in cutaneous diseases, and in chronic rheumatism, taken in the quantity of a pound twice or thrice a-day. It has also been employed in the treatment of obstinate venereal symptoms, especially as an auxiliary to mercury.

DECOCTUM HORDEI DISTICHI. Decoction of Barley.
(Decoct. Hordei, *Ph. Lond. Dub.*)

“Take of Pearl Barley, two ounces; Water, five pounds. First wash off with cold water the flour ad-

hering to the barley; then boil the barley for a short time with about half a pound of water, to extract the colouring matter. This being rejected, put the barley thus purified into five pounds of boiling water. Boil this to one half, and strain.

This decoction is never prepared in the shops. It is, however, very extensively used as a diluent in febrile diseases; and as it is of some importance that it should be grateful, it has been judged proper to give directions how it may be best prepared. Similar directions are given by the London and Dublin Colleges; and they have also inserted another composition, under the name of DECOCTUM HORDEI COMPOSITUM, in which raisins, figs, and liquorice root are boiled with the barley,—additions which probably render it rather cloying to the taste and stomach, and from which no great advantage can be derived.

DECOCTUM POLYGALÆ SENEGÆ. Decoction of Seneka.

(Decoct. Senegæ, *Ph. Lond.*)

“Take of Seneka Root, one ounce; Water, two pounds. Boil to sixteen ounces, and strain.”

Under the form of decoction, senega has been employed as an expectorant in pneumonic affections, attended with accumulation of mucus in the bronchiæ, and as a diaphoretic in chronic rheumatism; and though not much used, a formula similar to this has been introduced into the last edition of the London Pharmacopœia. The dose is two or three ounces three or four times a-day.

DECOCTUM SMILACIS SARSAPARILLÆ. Decoction of Sarsaparilla. (Decoct. Sarsaparillæ, *Ph. Lond. Dub.*)

“ Take of Sarsaparilla Root cut, six ounces; Water, eight pounds. Digest for two hours, in a temperature of about 195° , then take out the root and bruise it; put it again into the liquor, and boil it with a gentle fire to two pounds; then express it, and strain.”

The fecula, which is the principle in which the power of sarsaparilla resides, is not easily extracted merely by boiling the root. This is the reason of the particular directions to digest the root first, and then bruise it; it is thus softened, and yields its soluble matter more readily in the subsequent boiling. This decoction is the form under which sarsaparilla is always given, its dose being from a pint to a quart in the course of the day. It has been used in venereal cases, either to promote the action of mercury, or to remove symptoms which have remained after a long continued mercurial course. Dr Fordyce celebrated its efficacy in very high terms, in giving relief in nocturnal pains, removing eruptions, and as being the best restorative in the emaciation and debility remaining after the long continued use of mercury. Its efficacy in these affections has probably been overrated, and the opinion is perhaps more just which regards it only as belonging to the nutrientia, or as a mere demulcent. The benefit sometimes derived from it has perhaps as frequently arisen from the exhibition of mercury too long continued having been suspended, as from any action of

the sarsaparilla itself. The decoction has been used with considerable advantage as a demulcent in dysuria and morbid irritability of the bladder, occasioning incontinence of urine.

A FEW Decoctions, peculiar to the London and Dublin Pharmacopœias, remain to be noticed.

DECOCTUM ALOES COMPOSITUM. Compound Decoction of Aloes. Pharm. Lond.

“Take of Extract of Liquorice, half an ounce; Subcarbonate of Potash, two scruples; Extract of Aloes, Myrrh in powder, Saffron, of each one drachm; Water, a pint. Boil down to twelve fluidounces, and strain, then add of Compound Tincture of Cardamons, four fluidounces.”

The gum-resinous substances in this decoction are retained in solution, partly by the solvent power of the water, and partly by the action of the alkali; and by the addition of the spiritous tincture, any spontaneous decomposition will be more effectually prevented. The composition is newly introduced into the Pharmacopœia, and is said to be analogous to one in use, under the name of Beaume de Vie. It is one which must be very nauseous, and it is not obvious what peculiar advantage can belong to it. As a stimulating aperient, it may be given in the dose of two ounces.

DECOCTUM CYDONIÆ. Decoction of Quince Seeds.
Pharm. Lond.

“Take of Quince Seeds, two drachms; Water, a pint.
Boil with a gentle heat for ten minutes, then strain.”

Quince seeds abound with mucilage, which is extracted easily by boiling in water. It is liable to spontaneous decomposition, and having no peculiar advantage is little employed.

DECOCTUM DULCAMARÆ. Decoction of Woody Nightshade.
Pharm. Lond.

“Take of the Stalks of Woody Nightshade cut, one ounce; Water, a pint and a half. Boil to a pint, and strain.”

Under this form the woody nightshade may be employed; but there seems no propriety in giving a formula for its preparation, more than any other vegetable substance, which may be given under the same or any similar form.

DECOCTUM LICHENIS. Decoction of Iceland Liverwort.
Pharm. Lond. & Dub.

“Take of Liverwort, one ounce; Water, a pint and a half. Boil down to one pint, and strain.” In the Dublin Pharmacopœia, a digestion of the water on the lichen for two hours is ordered, and then boiling for a quarter of an hour.

The fecula or mucilage of the lichen is extracted by water by boiling, and it is under this form of decoction

that it has been employed as a demulcent, and a mild nutritious substance easy of digestion.

DECOCTUM MALVÆ COMPOSITUM. Compound Decoction of Mallow.

“Take of Mallow dried, an ounce; Chamomile Flowers dried, half an ounce; Water, a pint. Boil them for a quarter of an hour, and strain.”

This decoction is designed for the same purpose as the decoction of chamomile, that of serving as a vehicle for fomentations and enemas; and the same observation applies to it.

DECOCTUM PAPAVERIS. Decoction of Poppy. Pharm. Lond.

“Take of the Capsules of the White Poppy cut, four ounces; Water, four pints. Boil for a quarter of an hour, and strain.”

The decoction of the capsules of the poppy has been frequently used as an anodyne fomentation, and is now, with propriety, introduced as an officinal preparation.

DECOCTUM QUERCUS. Decoction of Oak Bark. Ph. Lond.

“Take of Oak Bark, an ounce; Water, two pints. Boil down to a pint, and strain.”

The astringency of the oak bark is extracted by boiling in water; and the decoction is the common form under

which it is used, being applied externally in hæmorrhoids, prolapsus ani, leucorrhœa, and profuse menorrhagia.

DECOCTUM SARSAPARILLÆ COMPOSITUM. Compound
Decoction of Sarsaparilla. *Ph. Lond. Dub.*

“Take of the Simple Decoction of Sarsaparilla boiling, four pints; Sassafras Wood cut, Raspings of Guaiac Wood, Liquorice Root bruised, of each one ounce; Mezereon, three drachms. Boil for a quarter of an hour.” In the formula of the Dublin Pharmacopœia, the proportion of the mezereon, the active ingredient, is only one drachm to three pints of water.

This is nearly the same composition as the Lisbon Diet Drink, celebrated, as has been already remarked, in the treatment of secondary venereal affections, or symptoms appearing during a protracted mercurial course. The efficacy of the preparation has been supposed to depend principally on the mezereon, yet the other substances may add something to its power, and it is perhaps preferable to adhere to the original composition of remedies of this kind, so far as this is unexceptionable. Its dose is four or six ounces, three or four times a-day.

DECOCTUM ULMI. Decoction of Elm. *Ph. Lond. Dub.*

“Take of the Fresh Bark of the Elm bruised, four ounces; Water, four pints. Boil down to two pints, and strain.”

This decoction has been recommended in cutaneous eruptions, but is little used. Its dose is four ounces.

DECOCTUM VERATRI. Decoction of White Hellebore.
Pharm. Lond.

“Take of White Hellebore Root beat, an ounce; Water, two pints; Rectified Spirit, two fluidounces. Boil the white hellebore root with the water down to a pint, and strain; when cold, add the spirit.”

This decoction is employed as an external application in some cutaneous diseases, principally in psora. It is a much less unpleasant application than the sulphur ointment, and is occasionally successful.

DECOCTUM DIGITALIS. Decoction of Foxglove. Ph.
Dub.

“Take of the Leaves of Foxglove dried, one drachm; Water, as much as may be sufficient to afford eight ounces of the strained decoction. Place the vessel on a gentle fire, and remove it when the liquor begins to boil. Digest for a quarter of an hour, and strain.”

Water extracts sufficiently the active matter of the leaves of foxglove by infusion, and there is therefore no necessity for boiling it upon them. The decoction in this preparation is, however, so slight, that it cannot alter the powers of the medicine, and it may be regarded as analogous to the infusion of the other Pharmacopœias. The proportions too are the same, and it may therefore be given in the same dose.