

AN  
INAUGURAL DISSERTATION  
ON

*Antispasmodics*

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Antispasmodics are usually defined  
stimulant substances which allay irregular  
muscular contraction. In whatever manner  
muscular action takes place it may be af-  
firmed that it is altogether attributable  
to the nervous system; the nerves of mo-  
tion being those engaged in it whether  
the stimulus or exciting power be  
mental or material. The motion which is  
induced is transitory and always followed  
by a state of rest, it is this alternation  
of motion and quietude under due reg-  
ulation which constitutes the distinction  
between ordinate and inordinate mus-  
cular action. If after muscles have con-  
tracted they retain this condition when  
the exciting cause ceases to operate they  
are said to be in a state of spasm and  
such medicines as have the power of  
resolving this state are termed antispas-



medics. If narcotics allay irritability  
sooth pain and produce diminished  
susceptibility to the impressions of  
exciting agents it may reasonably be  
inquired in what respect antispasmodics  
differ from narcotics.

The chief circumstance in which <sup>anti</sup>-  
spasmodics differ from narcotics is that  
the administration of the former is not  
followed by the insensibility to impressions  
and collapse which almost invariably fol-  
low the exhibition of narcotic substance.  
No such effects can be induced by anti-  
spasmodics even in large doses; yet  
they are as powerful as narcotics in  
repressing inordinate muscular ac-  
tion. In explaining therefore the differ-  
ence between antispasmodics and  
narcotics we may hazard the opinion  
that it is probable the impression exer-



ted on the extreme nerves by a narcotic is confined to those of sensation and must be communicated to the brain before the effect is produced; whereas that caused by an antispasmodic is confined to the nerves of motion and produces an immediate and more permanent result by some changes effected in the state of the motor nerves independent of any communication with the sensorium. If this opinion be correct antispasmodics in the strict meaning of the term stand in the same relative position to narcotics as astringents to tonics. But whatever may be their mode of action the distinct nature of an antispasmodic acting simply as such is very obvious; and antispasmodics may be regarded as holding an intermediate place between narcotics



and tonics - less diffusive but more durable than the former - more immediate but less permanent than the latter. Another point requires consideration, viz, whether antispasmodics are to be regarded as stimulants or sedatives. If our hypothesis be correct they have a sedative operation for if the irregular or inordinate action which they overcome be the consequence of irritation either mental or corporeal it follows that in resolving spasm the susceptibility of impression in the extremities of the motor nerves must be diminished and this can only be the result of a sedative power. It may however be affirmed that this may be either immediate or the consequence of a previous stimulant operation:



Thence we can explain the reason why some of these medicines which are direct antispasmodics stimulate the general system and consequently quicken the pulse; since like narcotics their primary action may be stimulant and quickly followed by collapse. According to this mode of reasoning the same results may follow from the influence of the exclusive operation of antispasmodics on the nerves of motion as from that of narcotics on those of sensation.

Antispasmodics as far as regards their mode of action may be divided into direct or those which exert their influence on the nervous energy but neither as narcotics or tonics and indirect or those narcotics and tonics which produce



an antispasmodic effect.

The effects of antispasmodics are generally perceptible very soon after their administration more especially if the powers of the individual are weak. It should however be kept in mind that this class of remedies is of no avail indeed is positively injurious when the spasmodic muscular action is the consequence of inflammation of the brain or spinal marrow; under such circumstances blood-letting and other measures calculated to subdue the primary disease are the proper measures to be adopted. It is necessary also to mention that the operation of antispasmodics is very transient and that by frequent



repetition their influence on the nervous system is much impaired. the dose therefore requires to be modified very much according as the individual has or has not been accustomed to their employment.

One of the most powerful antispasmodics musk is too expensive to be generally prescribed particularly as the dose is required to be very large in order to obtain a satisfactory result from its employment. It has a powerful influence in diminishing the violence of the paroxysms of idiopathic epilepsy and greatly lengthening the intervals when the dose is carried to the extent of a drachm given at intervals of eight hours. It is most advantageously prescribed in the form of bolus: the mixture and the tincture.



of the pharmacopoeias being very uncertain preparations. Much less can be said in favour of castor which is greatly inferior to musk as an antispasmodic.

With respect to indirect antispasmodics little is required to be said. In selecting them we must be guided by the state of the patient and the nature of the exciting causes of the spasms which we are called upon to relieve. If they are the result of local irritation and kept up by habit after the removal of the irritating cause narcotics are to be employed as the most powerful means of allaying irritation and breaking the habit which has been acquired. But if the spasm is maintained by a peculiar susceptibility to impressions which



is always more or less connected with debility then tonics are to be administered; and the more rapidly the body can be brought under their influence the better.

Something may be expected to be said with regard to mental impressions as antispasmodics. There can be no doubt that some mental states produce and maintain spasmodic action in the body while others as readily operate as powerful antispasmodics. As a minute consideration of this question however interesting in itself would exceed our limits we shall merely allude to the power of abstraction. In every instance of spasmodic action from whatever cause the atten-



tion is directed to the part affected; so long as this exists in corporeal agents which do not make a greater impression on the mind than that produced by the spasm can resolve it: but when then attention is withdrawn from the spasm it is instantaneously relaxed. Thus a man has his shoulder-joint luxated: and after various attempts the luxation cannot be reduced on account of spasm which has supervened and which is maintained by the attention of the patient being directed solely to the part; but abstract the attention and the spasm instantly yields and the head of the humerus slips into the socket. In the same manner



and with the same success the anti-spasmodic influence of abstraction has been experienced in hernia and other diseases; in its application however great judgment and nice discriminations are requisite.

On reference to the practical employment of antispasmodics their utility is confined to one order of diseases only the spasms. In tetanus the narcotic antispasmodics particularly opium and camphor have been much employed but neither these nor the direct antispasmodics musk oil of amber or assafoetida have fulfilled the anticipations of practitioners. The most powerful is undoubtedly opium; and it is almost incredible what doses of this remedy may be administered in this disease fifteen



and twenty grains have been given every three hours for eight and ten days successively with little effect upon either the disease or the constitution of the patient. when opium has proved beneficial its effects have been rarely obvious until after the tenth or twelfth day of its exhibition but indeed we may safely affirm that little reliance is to be placed upon the influence of the most powerful antispasmodics direct or indirect in this disease.

On cholera when purgatives have failed to procure relief antispasmodics such as musk opium and belladonna have been freely administered but in this disease more decided benefit has been obtained from tonics operating as antispasmodics than



from either narcotics or musks. Much advantage has resulted from the use of the nitrate of silver the carbonate of iron and arsenious acid; all of which operate as indirect antispasmodics. It is true that in some cases in which these tonics have failed the disease has yielded to the use of musk and camphor; but in general less advantage has been derived from the employment of direct antispasmodics than from the nature of the disease might have been reasonably anticipated.

Antispasmodics effect but little good in epilepsy. Some of the narcotics have sometimes appeared to prove useful. Among the indirect antispasmodics the preparations of zinc copper mercury and arsenic have each had



a transitory reputation; but if any of the metallic Tonics merit confidence it is the nitrate of silver which operates by diminishing the susceptibility to those impressions that produce irregular action.

In asthma at least in one form of it antispasmodics have been found highly beneficial. Assafoetida among the direct and opium and Stramonium among the indirect antispasmodics have been found capable of accomplishing every thing to be expected from this order of remedies in that affection. In Hooping-cough the direct antispasmodics have been little employed: but some of the indirect for example belladonna and conium are much to be relied upon.



In no disease have antispasmodics more satisfied the anticipations of the practitioner than in hysteria. It is the only disease in which at the present day direct antispasmodics are much used. In this affection the convulsions are of the most severe description. During the paroxysm the direct antispasmodics especially assafoetida and valerian have been found very useful when prescribed in sufficient doses which is rarely the case: for as we have already said little benefit can be expected unless the doses be much larger than those usually prescribed. During the intervals the metallic tonics should be chiefly relied upon as antispasmodics and indeed it is only by endeavouring to correct the morbid susceptibility



existing in these cases that any permanent benefit can be expected.

Upon the whole the range of the order of antispasmodics is extremely circumscribed: at best the different substances can be regarded as auxiliaries only. Spasm is to be regarded rather as the result of causes which are to be removed than as a circumstance for which remedies are to be directly administered.