The peroral toning of the uterus with specific regard to cattle by Professor Dr. J. Andres, Zürich[1]

I

The peroral administration of substances to influence inner organs, is one of the oldest therapies in people and animals. By observing of symptoms after a desired or undesired intake of substances from the environment, it was possible to deduce that such substances offered opportunities for using them as therapeutics. Ancient scripts, including religious works such as the Old Testament, the Talmud, etc. provide long lists of such substances. These mainly include plants and plant derived substances and to a much lesser extent animal derived substances and minerals. Despite enormous scientific progress, it is evident that even today substances derived from nature, especially those originating from plants, still play an important role in modern medicine. Albeit, these are often no longer used in their original form, but undergo industrial processing to extract the effective components. Extraction of the individual components provides the opportunity for accurate dosing. In addition**,** both in human and veterinary medicine, these plant derived substances are used as infusions, decoctions and powders for therapeutic purposes.

Although a good number of effective substances are known and their efficacy is scientifically proven, the therapeutic effects of many is still not well understood and agreed upon. Historically and partially still today, drugs, drug mixtures and combinations with other substances are administered orally to domestic animals, especially to production animals, to treat nearly all internal diseases and sometimes to prevent diseases. Such agents have been and are available today to treat digestive, respiratory, urinary and genital tract disorders and are also used against parasitic diseases and any general metabolic disturbances.
One could ask, whether it is currently valid that livestock keepers continue to treat their animals with natural products that do not require veterinary supervision, since nowadays the chemical industry provides valuable agents for topical, parenteral and peroral applications to be administered by veterinarians, following appropriate clinical investigation and diagnosis. This question can be answered affirmatively. Farm medical chests, as the home medical chests for humans, should contain certain stocks. Instruments, first aid materials and medicines are essential for treatment in emergency cases, as well as for the routinely use in various situations. These situations can be preventive measures in relation to grazing, a change of feed, or special performances. Another such "home" treatment situation is - chiefly in cattle -

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the support during the puerperium. The use of such treatments can be justified, if their efficacy and their safety are proven and if they are reasonably priced. In Switzerland, in order to serve the agriculture sector, medicaments are always being delivered, by the members of the collective veterinary drug distributors, to the responsible veterinarian. This policy includes the medicaments for use by the animal owner. In this way, the veterinarian keeps the oversight over the livestock entrusted to him. And the animal owner obtains valuable medicinal preparations at a reasonable price.

The farmer's use of effective drugs and other medicaments has, on the one hand, an objective material rationale. Prudent use is inevitably based on sufficient understanding and experience in particular situations. These being, easy and clear conditions and, naturally, in case of illness only after veterinary consultation. The farmer should know the medicaments he works with from his own or some one else's experience. And it must be certain that the medicaments are harmless and promiss him a preliminary and perhaps ultimate success. It is also understandable that the animal owner deploys such medicaments, especially prophylactically, for economic reasons. On the other hand, there is also a subjective ideological motive that encourages an animal owner to treat his own animals. He too would like to help, by own hand. In general, the farmer is very willing to take the often unpleasant administration of medicines upon himself, if he is convinced that it is of help.

II

Juniper historically belongs to the group of longest known drugs, used in man and animal. These conifers are dispersed on the entire northern hemisphere. Karl Hartzmann (Vet.med. Diss., Zürich, 1950) has carried out a literature research and traced its use in human and veterinary medicine from the ancient times until modern time. The Juniper that predominantly was and is still used is *Juniperus Sabinae L.*, Savin Juniper. The juvenile needle-like leave tips are harvested as *Herba Sabinae* (Folia, Summitates). This Juniper species can be found in Switzerland on the southern slopes of the valleys of the Alps. The plant is considered as characteristic for the canton of Valais (Schinz und Keller, 1905).

The medical indication of *Herba Sabinae* is well documented. According to Hartmann (I.c.[2]), its clinical use was first recorded in the Corpus Hippocraticum (400 B.C.). It was used for "women diseases". Marcus Portius Cato (200 B.C.) and others at a later date, like Columella (60 A.D.) and Plinius (70 A.D.), used this remedy to treat cattle. Galen (born 129 A.D.) allegedly is known to have said: „Savin kills the foetus and makes the dead foetus abort" (Lewin, 1926). Greek medicine influenced South and Central Europe and even today this remains evident in medicinal practices of Europe and in the Near East. *Herba Sabinae* has at all times been used via the oral route, in animals to support post partal emptying of the uterus and in

[2] I.c. = In charge (of), the first author, compares to *et al.*

humans predominantly to induce abortion. According to Lewin (I.c.) it was last used at the turn of the century (around 1900) in Central Europe and in Russia, in North Africa and in the USA.
The questionable result and the need to use high dosages that could reach toxic levels has fortunately dispelled the use of *Herba Sabinae* as an abortifacient in humans over the last 50 years. Its toxidity often caused negative health outcomes, including death of the mother. This natural drug is still used in animals, especially in cattle, in the form of infusions or decoctions with other appetite stimulating, diuretic, secretolytic drugs and minerals. It is also combined with resins and essential oils, and applied primarily during the puerperium as a so called "Cleansing Rinse" (Koch, Handlexikon für Tierärzte, Wien, 1892, Frasch, 1911: *Pulv. Summitates Sabinae* 100,o, *Pulv. Rad. Gent.* 70,o, *0l.Terebinthinae* 25,o). These preparations are suited as prophylaxis against stagnation of physiological or pathological uterus content. They trigger accelerated discharge of the uterus content after birth (amnion, lochia) through increased tonus. In the same way they enable a more rapid healing of subacute endometritis and thus help to avoid these infections becoming chronic. Forty years ago *Summitates Sabinae* extract, prepared with non-resorbable oil as a vehicle, was applied directly into the uterus to improve uterus tonus. It was called 'Metratonin' (compare Andres, 1941). This preparation has since been replaced by Metrasepton, a combination of Metratonin and Lugol's solution.

Many authors advocate that the treatment of chronic endometritis by disinfecting of iodine preparations, antibiotics, etc. count, but just as much the quick and lasting toning of the uterus as a precondition for emptying its content. Their opinions are supported by experience. At present, the majority of chronic uterus diseases, especially in cattle, is treated following Albrechtsen. This method entails a direct application of medicaments via catheter into the uterus lumen. The manipulative mode of application is in itself triggering or invigorating a contraction of the uterus. Albrechtsen (1910, 1920) was not the first to use this method, but he standardized it. He distinctly recommended to use Lugol's solution. Albrechtsen, despite having worked out this method named after him, proclaimed in 1920, that an endometritis is even better influenced by electrolysis. He filled the uterus with an one promille copper sulphate solution, put the anode of a galvanic apparatus inside the lumen, the cathode on the abdominal wall and led an electric charge of 20-50 milliamperes through for 2-5-10 minutes. It initiated a strong uterus contraction and "in most cases the suffering should be cured after a single treatment" (compare Richter, 1926). Albrechtsen also described the method as "really elaborate and time consuming", but Richter (I.c.) initially adopted it. However, due to the elaborateness and a not so convincing success, it was later left. But the various authors, judging from the many experiments, acknowledged the importance of toning the uterus in endometritis therapy and prevention.

When, following the empirical use of *Herba Sabinae* and similarly acting medicinal substances, a rapid discharge from the uterus was observed, the

observants concluded a toning of the uterus, which set of ample investigations to scientifically explain the observed effect. Hartmann (I.c.) under supervision of Professor Dr. H. Graf, Zürich, worked through the literature that was available to him and carried out research on the motoric effect of *Herba Sabinae* in the isolated cattle uterus.

In the majority of the older veterinary pharmacology works, the use of *Herba Sabinae* during pregnancy is discarded, due to the danger of stillbirth or teratogenicity. The effect is in most cases described as very arousing to the abdominal organs. Some authors (e.g. Fröhner, 1896) suspect an unambiguous and specific effect on the uterus musculature. However, this is rejected by most other researchers and observants.

The newer veterinary pharmacology and toxicology works mention Juniper only offhandedly, e.g. as a diuretic (Steinmetzer, K., 1955) or because of its toxic effect, presumingly causing abortion (Garners Veterinärmedizinische Toxikologie, 1968). M. Frimmer does not mention the drug at all in his „Pharmakologie und Toxikologie für Veterinärmediziner[3]" (1969).

The opinion of *Herba Sabinae* having a specific effect on the uterus, was particularly triggered by the trials of Röhrig, 1879. Röhrig injected *Extractum Sabinae* in an aqueous form into the jugular vein of a rabbit and observed changes of the uterus through an abdominal window. Already after 2 to 3 minutes motoric changes, being peristaltic and tetanic contractions, could be determined. The effect, however, was absent when the lumbar spinal cord was disrupted before injection. Röhrig therefrom concluded, that the point of action for the motoric effect on the uterus laid in the spinal cord of the lower back. Because the lumbar spinal cord does not exclusively innervate the uterus, an effect is also assumed for the other abdominal-pelvic organs.

Since the turn of the century (around 1900), according to Hartmann (1950) repeated investigations have been carried out with *Herba Sabinae* in the *in vivo* isolated uterus: in guinea pig by Prochnow, 1911, and Kagaya, 1927; in cat by Macht, 1913 and Redemann, 1918; in human by Gunn, 1920; and in rabbit by Foschi, 1938. The most extending investigations, like mentioned before, were implemented by Hartmann (1950). According to his results and those of most of the earlier investigators, who researched the isolated uterus, it became apparent, that the contractions observed *in vivo* and the discharge from the uterus *in vitro*, could not be reconstructed in the isolated uterus. Therefore, Hartmann came to the following conclusion: a toning or rhytm stimulating effect of Sabina preparations on the peripheral tissue of the uterus, also *in vivo*, cannot be expected as a given. This means that only an indirect reflective conditioned effect is up for discussion. The strong arousing effect of Sabina, the arousal symptoms at toxic dosages and the pathological signs at section (being intravascular blood influx of the endometrium) after an experimental Sabina infusion, support this view. The

[3] Pharmacology and Toxicology for Veterinarians, title of a textbook for students.

in vitro revealed paralysis is apparently *in vivo* concealed by a reflective inducement. *Herba Sabinae* does not hold an unique position as an uterus tonic. Its mode of action is similar to that of Cantharides, Copaiva balm**,** turpentine oil[4], aloe, etc.

Turpine oil and Copaiva balm as a peroral uterus tonic may well be as widely spread as *Herba Sabinae*. They are also frequently combined. Benesch (1957) writes (S. 689): "The thought of influencing endometritis in cattle (or horse) by indirect healing routes, led to various non local treatment methods. Among these are above all the oral administration of applications that tone the uterus and encourage secretion, such as *Ol. Terebinthinae* with *Balsam. Copaivae* and *Juniperus Sabinae* preparations". The peroral administration of turpine oil and copaiva balm in an appropriate carrier substance has become known, in particular due to Frasch's work (1911). Hartmann (see his conclusions above) also emphasized, that the mode of action of these resins can be considered identical to the one of *Herba Sabinae*. Also according to other authors, it is a stimulant with a strong hyperemic effect on the abdominal and pelvic organs. In higher dosages and more frequent use, arousal symptoms can also be observed in the urinary tract. Wyssmann, in the year 1941, has assembled and critically illuminated the *Herba Sabinae* trials known to him at the time. As the Director of the Berner Veterinary Ambulatory Clinic, Wyssman had *Summitates Sabinae pulvis* adminstered in combination with other medicaments in his clinic for decades. He also in a trial of his own examined the tolerability of the substance in an elderly burrow cow. The trial indicated, that a total of 1330 g of *Summitates Sabinae pulvis* in an infusion, if administered in increasing dosages during 4 days, failed to significantly disturb the health of the cow. Most remarkable were the effects on the uterus, being contractions with a subsequent vaginal discharge, and on the urinary tract, being strangury. Post mortem section displaid among other things a very red spotted and swollen bladder mucosa, a light red uterus serosa and a swollen cervix.

III

In the year 1933, I took over the buitary[5] ambulatory clinic of the Zurich veterinary faculty and directed it untill 1970. At the time, it was common practice to administer a "drink" to the dam after calving. This, usually regardless of whether the birth had proceeded in a normal way or not. The decoction generally consisted of *Herba Sabinae*, *Fructus Juniperi*, *Radix Asari*, *Natr. sulfuric.* and *Semen Lini*. If necessary, it was strengthend with *Ol. Terebinthinae*, especially in cases of persistent chronical endometritis. The decoction was popular. Many farmers kept a large stock of this powder mixture. It could ever be observed, that the toning of the uterus renewed and a strong discharge of lochial fluidity appeared, if the medicament was administered at the third untill the fifth day post partum.

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[4] Oil and resin derived from certain coniferous trees
[5] Concerning cattle

In the year 1954, the firm Werner Stricker AG, Zollikofen (Switzerland) produced a preparation, "Utrorale" and made it avaiblable to the veterinarian. In a short time, it largely forced out the practitioner's self mixed powder, due to its good effect and its easy use in comparison to the selfmade decoction. The preparation "Utrorale" contains as essential components *Oleum Sabinae*, *Oleum Terebinthinae*, *Balsamum Copaivae*, *Natrium sulfuricum* and a few other substances, that can work similar to the chief ingredients. Additionally, it contains additives, that are necessary for the stabilization. The firm Werner Stricker AG conducted a survey on my request, within the period of a year (1971), among the Swiss veterinarians who regularly used Utrorale. It was envisaged that the outcome would provide an overview of the indication area, the dosing and the time of use, and of the observations made by the veterinarian and the animal keeper. The response rate of the survey was high. I thank all colleagues for their participation.

The first question concerned the indication area. Did the individual veterinarian use Utrorale in cattle after birth in all cases or did he select particular cases? As can be expected, great differences get displaid with regard to the applied preparation, depending on the area, the propaganda and length of getting accustomed to a specific product. However, the use of uterina[6] of different provenance, different composition, but always perorally applied, is clearly very widespread, especially after difficult births and in cases of retained placenta. Also after abortion, embryotomy and after a ceasarean the optional answer "common use" outweighs the option "only in most cases". And in turn the latter option is more frequent than the "only seldom" administration of the preparation or the "complete abstainance" of uterina. Several colleagues also prescribe Utrorale regularly after veterinary obstetrics. The majority, however, does not. They mostly prefer a specific antibiotic prophylaxis against uterus disorders. The application of any (one) uterinum after a normal birth without veterinary assistence is not very discriminate. The differences are explained by familiarisation with the preparation, habitual employment of a decoction and naturally also due to the attitude of the veterinarian. Most practitioners advise regular application of a uterinum**,** also after a normal birth. In the practice area of the ambulatory clinic in Zurich, since many years, only very few bovine herds can be found, that have not been regularly treated with a uterinum after calving. We recommended Utrorale.

A further question was enquiring about the dosage. Did in certain cases the dosage of Utrorale get increased, resp. when the preparation was repeatedly administered? Two thirds of the respondents answered this question affirmatively. As main indications for a possible repetition of the application in the prescribed dosage, they designate firstly retained placenta and furthermore chronical endometritis, congestion of lochia, joint metastases

[6] Uterina plural for uterinum, a medication or tonic for the uterus

(sapraemia[7]) and in cases, where by general impression the uterus involution seems somehow delayed.

Subsequently, the survey held a question to determine at which point in time after calving a peroral uterinum is administered and if differences exist according to a normal or difficult birth indication. The predominant view here is, that in normal births a uterinum should be used only 3 to 5 days post partum. This, in order not to disturb the normal course of the puerperium. However, if the uterus tonus is deficient even after 3 to 5 days, the uterinum is to be administered to secondarily induce a new toning impuls. This attitude is right in my opinion. An uterinum is, as it were, a whip. To set the uterus into motion once again, when it threatens to fatigue. Likewise, one shows and gives a horse usually only the whip, when after a long journey signs of fatigue appear. Exactly then it should be whipped up to persevere the final lap. In cases of retained placenta the deployment of an uterinum mostly is started app. 24 hours post partum.

In difficult births with a significant disturbance of the general condition (fever, etc.), the deployment of an uterinum is contra-indicated. Incitation of the genital tract to renewed activity, so also the use of an uterus tonic, will in such cases only be considered at a later moment, if necessary at all. The survey also contained questions on whether the cows more rapidly conceived after Utrorale and if a favourable influence was observed on the milk yield. This is often claimed. It is obvious, that no definite answers were to be expected to these questions, because control visits could not be made.

Many veterinarians haven't answered these questions or explicitly denied an answer. The few who did respond, notice that the animals were more rapidly ready to conceive again, which is completely understandable by way of the more speedy cleansing of the genital tract. If additionally, by a quicker healing of any suffering, the milk yield soon reaches the desired level again. This too is understandable. It explains why in some areas Utrorale is also called the "milk drink" by the farmers. Neither Utrorale nor another so called "cleansing drink" can be awarded a specific effect on ovaries or mammary gland. These preparations assist in shortening the convalescence time, by shortening the puerperium, due to quicker emptying of the uterus. Thus a favourable influence on conception and milk yield can only be claimed indirectly. Therefore, Utrorale is not deployed in anoestrus, expect for very few special non-conception cases, such as suspected or proven chronical endometritis. Also, for the expulsion of a mummified foetus, an uterinum can be helpful.

To complete the picture, we asked the veterinarians whether Utrorale was also used in other domesticated mammals. That this kind of preparation is seldom used in horses, is understandable. It is refused by the animal via feed

[7] Intoxicated or infected state of tissue, secondary to septicaemia or blood poisioning caused by micro organisms usually after infection of a primary wound.

or potions. Pouring it into its mouth is not easy and administering it with a probang is very intricate. It must be left to a specialist. In sheep and goat Utrorale is often used. Namely, in the aforesaid indications for cattle. As dosage a quarter (till half) of the cattle dosage is specified. The results are valued as good to very good. In goats, however, the administering is difficult. To pigs Utrorale is seldom administered. But here success should also be good.

IV

Some farmers prefer as a support for the puerperium of their animals, aromatic and pleasant tasting preparations, that do not need to be administered, but are willingly taken in by the animal itself. These preparations often also have a beneficial influence on the digestion. Other farmers prefer the easy use and long shelf life of the modern preparations, like Utrorale. Utrorale, if correctly dosed, has no unpleasant side effects. However, there are several notifications, that it can temporarily and slightly excite the digestive tract of the calves, if it is administered already on the first day post partum. The same is notified for suckling lambs, if the dosage is chosen too high, namely half the cattle dosage instead of approximately a quarter (a single notification).

V

Without wanting to pay hommage to a stringent methodology and wishing to safeguard the liberty of the expert's opinion, the following guidelines for the use of uterina can be assigned:

1. As a sole mean, a uterinum may be used after normal births, in delayed involution, for instance with congestion of lochia, as wel as in subacute endometritis tending to become chronic.

2. An uterinum can be used supplemental to the measures carried out or ordered by the veterinarian and prescribed medicaments, in case of retained placenta, after difficult births, after abortion, in case of mummies, as well as in chronic endometritis outside the puerperium.

3. In inflammatory conditions, e.g. acute endo-, myo-, peri- and parametritis, the uterus should in principal not be stimulated to tensity - neither orally, nor parentally.

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