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Assessment of Sedative and Analgesic Effects of Xylazine and Acepromazine in Dog

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Abstract

To investigate the comparative effect of xylazine and acepromazine for sedation in dogs, experiment was performed at Sind Agriculture University, Tandojam. Pre-treatment observations on body temperature, respiratory rate and pulse rate were recorded and later these observations were recorded after 5, 15, 25, 35, 45 and 55 min after sedation. All animals (n=10) kept in an experiment were examined for salivation, urination, head dropping, staggering, ped reflexes, eye reflexes, tongue profusion and vomiting. The results showed that the body temperature after 5, 15, 25, 35, 45 and 55 min of sedation with xylazine was 102.6, 102.3, 102.1, 102.3, 102.4 and 102.5°F, against pre-treatment of 102.9°F averaging 102.4°F. While, in acepromazine sedated dogs the body temperature was 102.7, 102.4, 102.2, 102.0, 102.3, and 102.8°F, respectively against pre-treatment of 103.0°F averaging 102.5°F. Mean respiratory rate after prescribed minutes of sedation with xylazine was 20.0, 17.4, 16.4, 18.6, 19.8 and 19.6, against pre-treat value of 18.57 averaging 19.1 breaths/min. While in acepromazine sedated dogs, the respiratory rate was 20.4, 18.4, 19.6, 19.0, 19.6 and 21.4, against pre-treat value of 20.2 averaging 20.2 breaths/min. The pre-treatment mean (control) values for pulse rate were 78.8 and 83.0 beats per minutes in dogs treated with xylazine and acepromazine, respectively. The onset of sedation in dogs treated with xylazine was 103 seconds, and in anacepromazine, the average onset of sedation was 130 seconds. On average, total duration of sedation in dogs sedated by xylazine was 65.4 min and in acepromazine, 39.8 min were observed. It was noted that in deep sedation salivation, urination, head dropping, staggering, ped reflexes, eye reflexes, tongue profusion and vomiting generally occurs in both groups, which proved that xylazine produced deep sedation, while acepromazine produced moderate sedative.

Keywords

Acepromazine, Eye Reflexes, Sedation, Xylazine

1. Introduction

Opioids are used commonly in combination with tranquilizers and/or analgesic drugs to improve sedation, analgesia, and to reduce the dose required of either drug compared to its use alone. The combination of an opioid plus a tranquilizer has been termed neuroleptanalgesia [1]. Tranquilizers and sedatives are commonly used in veterinary practice to facilitate handling and as premedication before general anesthesia in small animals. Phenothiazine agents and α2 agonists are often used to reduce anxiety and produce sedation in dogs [2]. The sedation is a medical procedure involving the administration of sedative drugs, generally to facilitate a medical procedure with local anesthesia [3]. It is typically used in procedures such as endoscopy, vasectomy or minor surgery and in dentistry for recon-structive surgery, some cosmetic surgeries, removal of assessing of applicable degree of sedation in patients in order to avoid under-sedation and over-sedation is very essential [4].

Agents that cause an adequate depth of anesthesia are pivotal during surgery and they should have adequate analgesic activity, a wide margin of safety, sufficient depth of anesthesia to facilitate surgical manipulations and recovery should be smooth devoid of any undesirable complications [5]. A safe anesthetic method is therefore needed both for surgeons undertaking research and for practicing veterinarians Xylazine is an agent classified as a2 adrenergic agonist, which is used in various animal species [6]. This agent produces a dose-dependent sedative effect, evidenced by muscle relaxation, ataxia, palpebral, labial and head ptosis, cardio respiratory depression, absence or reduction of reaction to external stimuli, diminution of locomotor activity and hypnosis, which occur a few minutes after administration [7]. The sedative and antinociceptive actions of a2 agonists are a result of its interaction with central pre-synaptic a2 adrenoceptors. These are known as auto-receptors, and when stimulated, they suppress the release of the chemical mediator at nerve endings [8]. Currently, it is known that the sedative and analgesic effects of these drugs are mediated by a reduction in adrenergic activity in the locus coeruleus and supra-spinal regions, respectively [9]. Studies have been reported that xylazine is capable of inducing a block of superficial, profound and visceral pain [10]. [11] studied the sedative and antinociceptive effects of xylazine and detomidine and concluded that the two agents cause sedation, but that only detomidine has analgesic properties, although xylazine possesses antinociceptive effects [12]. Acepromazine is one of the most commonly used tranquilizers in veterinary medicine. It is a phenothiazine compound. Its mode of action is only partially understood but it involves blockage of dopamine nerve receptors in the brain. This makes it especially useful for treating car sickness, since that is often a combination of fear and motion sickness in dogs. The recommended dosage for acepromazine is 0.25 to 1 mg per pound of body weight. It can cause hypotension. In addition, acepromazine seems to make it easier for dogs with seizure disorders to have a seizure. This medication should not be used near the time of dipping or treatment with organophosphates for flea control [13]. Dogs are particularly sensitive to cardiovascular side effects but cardiovascular collapse has also occurred in cats. Sudden collapse, decreased or absent pulse and breathing, pale gums, and unconsciousness may occur in some animals [11]. Considering the significance of xylazine and acepromazine in clinical procedures for wisdom teeth, or for high-anxiety patients [14]. The method included inhalation sedation, oral sedation and intravenous sedation. The levels typically are agitation, calm, responsive to voice only, responsive to shaking only, responsive to pain only and not responsive. In conjunction with a medical history, the operating human being and pet animals therefore, this study was carried out to investigate *in vivo* evaluation of the effect of xylazine and acepromazine in dog.

2. Materials and Methods

The study was carried out to investigate the comparative effect of these two sedative agents on dogs. The study was performed in the laboratory of the Department of Animal Surgery and Obstetrics, Faculty of Animal Husbandry and Veterinary Sciences, Sindh Agriculture University Tandojam. Ten healthy dogs of about 10-15 kg weight and about 1.5-2 years of age were injected IV/BID with a standard dosage of a xylazine-acepromazine combination (0.3 to 2.2 mg/kg and 0.5 mg/kg used to observe the effect of xylazine and acepromazine in dogs, and their effect on various physiological factors (temperature, pulse rate, respiration rate etc.) were recorded as pre-treatment observations. Later these observations were recorded after 5, 15, 25, 35, 45 and 55 min after sedation. Dogs were obtained from the Tandojam city and were kept for one week in indoor patient ward of Department of Surgery and Obstetrics SAU, Tandojam during trails of research for present study. All the dogs were vaccinated and de-wormed prior to experiment and tags were applied to each dog for identification.

2.1. Experimental Procedures

All the dogs (n=10) were weighed before induction of Pulse-Amplitude-Modulation (PAM) and were off fed for at least 6 h before starting the experiment. Clipping was done and then antiseptic was used to disinfected site. Separate syringe was used for each drug and dogs besides valuable instruments were used and are given as follows along with their usage and functions.

2.2. Pulse Rate (Beats/Min)

Pulse rate was recorded using apparatus (HMV7905, Hoyer, Bremen) and manually (hand) by femoral artery before (control) and after induction of pre-anesthetic each 10 min up to recovery.

2.3. Respiratory Rate (Breath/Min)

Respiration rate was recorded using Respiratory Assist Devices HCPCS Code E0470, Philips Respironics China or Stethoscope (Made in China). However, it was used to monitor the rate of respiration from the dog before medication (control) and then after each 10 min up to recovery through thoraco abdominal movements.

Table 1. *Body temperature (°F) of dogs as affected by different anesthetic treatment.*

Time	Xylazine					Mean	Acepromazine					Mean
	Dog-1	Dog-2	Dog-3	Dog-4	Dog-5		Dog-1	Dog-2	Dog-3	Dog-4	Dog-5	
Pre-treatment	19	20	22	26	22	21.8	19	27	26	23	20	23.0
05 min	17	18	21	24	20	20.0	16	24	23	21	18	20.4
15 min	15	16	18	21	17	17.4	14	23	20	20	15	18.4
25 min	18	15	15	19	15	16.4	18	26	19	17	18	19.6
35 min	20	17	18	21	17	18.6	19	23	21	16	16	19.0
45 min	21	19	20	20	19	19.8	17	25	20	19	17	19.6
55 min	18	18	19	23	20	19.6	20	24	23	21	19	21.4
Mean ±	18.28 ±	17.57 ±	19.0 ±	22.0 ±	18.57 ±	19.1 ±	17.6 ±	24.6 ±	21.7 ±	19.6 ±	17.6 ±	20.2 ±
SD	1.03	1.05	1.08	1.06	1.05	1.05	0.97	1.06	1.06	1.05	1.03	1.01

2.4. Body Temperature

Body temperature was recorded before medication (control) and then after each 10 min of the recovery through clinical digital thermometer OEM: Zhejiang, China (Mainland) Model Number MT-519 rectally for at least 2 min. Related few other given studies were also kept under observations as follows.

(1) Checking the onset of sedation its duration and analgesia in choosing analgesics, the severity and response to other medication determines the choice of agent.

(2) Duration of recovery (depended upon dose by animal body weight).

(3) Degree/level of sedation/drowsiness (time interval noted through wrist watch in minutes).

(4) Analgesic effect was observed by pricking through needle.

(5) Salivation, bellowing, urination, defecation, staggering, tongue protrusion, etc. was observed.

Similarly various reflexes were also observed. Animals were kept under experiment in first week with; Acepromazine, Xylazine, Acepromazine, Xylazine and Acepromazine. Animals were kept under experiment in second week with; Xylazine, Acepromazine, Xylazine, Acepromazine and Xylazine. On the Organoleptic methods in which the aspects of food as practiced through the senses as; flavor, vision, smell, and touch, in cases where dryness, moisture, and stale-fresh factors were to be considered during the study period. The data so recorded on various parameters were subjected to statistical analysis using analysis of variance in general linear model (GLM) as suggested by Gomez and Gomez (1984) by means of computer package M Stat-C. In view of the statistical analysis results, the results were interpreted.

3. Results

3.1. Body Temperature

The results regarding body temperature of dogs given sedation with xylazine and acepromazine are presented in Table 1. It was noted that the pre-treatment mean (control) values for body temperature were 102.9°F and 103.0°F with xylazine and acepromazine, respectively. The mean values for body temperature after 5, 15, 25, 35, 45 and 55 min after sedation with xylazine for five dogs were 102.6, 102.3, 102.1, 102.3, 102.4 and 102.5°F, respectively with an average body temperature of 102.4°F. Similarly, the mean values for body temperature after 5, 15, 25, 35, 45 and 55 min after sedation with acepromazine for five dogs were 102.7, 102.4, 102.2, 102.0, 102.3, and 102.8°F, respectively with an average body temperature of 102.5°F. The results indicated that after treatment of dogs with xylazine the body temperature started to come down gradually and reached to a minimum of 102.1°F after 25 min of treatment against pre-treatment body temperature of 103.3°F. However, after 35 min of treatment, the body temperature again started rising and reached nearly to the base line value and it was 102.5°F after 55 min of treatment. It was further noted that after treatment of dogs with acepromazine, the body temperature started decreasing and reached to a minimum of 102.0°F after 25 min of treatment against pre-treatment body temperature of 103.0°F. However, after 35 min of treatment, the body temperature again started rising and reached nearly to the base line value and it was 102.8°F after 55 min of treatment. The comparison of anesthetic agents indicated that acepromazine caused slightly more decrease in body temperature of dogs as compared with xylazine treated dogs. Moreover the body temperature of individual dogs also varied considerably. However, the differences in the body temperature of dogs as affected by time period after treatment were statistically highly significant ($P<0.001$).

3.2. Respiratory Rate

The data in relation to respiratory rate of dogs given anesthesia with xylazine and acepromazine are presented in Table 2. It was observed that the pre-treatment mean (control) values for respiratory rate were 18.57 and 20.2 breaths per minutes in dogs treated with xylazine and acepromazine, respectively. The mean values for respiratory rate of 5 dogs after 5, 15, 25, 35, 45, and 55 min of anesthesia with xylazine was 20.0, 17.4, 16.4, 18.6, 19.8 and 19.6 breaths per minute, respectively with an average respiratory against pre-treatment respiratory rate of 21.8 breaths per minute averaging 19.1 breaths per minute. Similarly, the mean values for respiratory rate after 5, 15, 25, 35, 45 and 55 min after sedation with acepromazine for five dogs was 20.4, 18.4, 19.6, 19.0, 19.6 and 21.4 breaths per minute, respectively against pre-treatment respiratory rate of 23.0 breaths per minute averaging 20.2 breaths per minute. It

was recorded that after anesthetic treatment of dogs with xylazine, the respiratory rate was considerably reduced and reached to a minimum of 16.4 breaths per minute after 25 min of treatment against pre-treatment respiratory rate of 21.8 breaths per minute. However, after 35 min of treatment, the respiratory rate again started increasing and reached 19.6 breaths per minute after 55 min of treatment. The results showed that the respiratory rate was yet lower than the base line value even after 55 min of the treatment, the results further showed that after anesthetic treatment of dogs with acepromazine, the respiratory rate of dogs was significantly reduced and reached to a minimum of 18.4 breaths per minute, after 15 min of treatment against pre-treatment respiratory rate of 23.0 breaths per minute. However, after 25 min of treatment, the respiratory rate again started increasing and reached 21.4 breaths per minute after 55 min of treatment. The results indicated that the respiratory rate could not reach to the level of base line value even after 55 min of the treatment. The comparison of anesthetic agents indicated that both the xylazine and acepromazine were equally effective to cause reduction in the respiratory rate of the dogs after treatment. The respiratory rate of individual dogs also varied considerably. However, the differences in the respiratory rate of dogs as affected by time period after treatment were statistically highly significant ($P<0.001$).

Table 2. *Respiratory rate of dogs as affected by different anesthetic treatments.*

Time	Xylazine					Mean	Acepromazine					Mean
	Dog-1	Dog-2	Dog-3	Dog-4	Dog-5		Dog-1	Dog-2	Dog-3	Dog-4	Dog-5	
Pre-treatment	19	20	22	26	22	21.8	19	27	26	23	20	23.0
05 min	17	18	21	24	20	20.0	16	24	23	21	18	20.4
15 min	15	16	18	21	17	17.4	14	23	20	20	15	18.4
25 min	18	15	15	19	15	16.4	18	26	19	17	18	19.6
35 min	20	17	18	21	17	18.6	19	23	21	16	16	19.0
45 min	21	19	20	20	19	19.8	17	25	20	19	17	19.6
55 min	18	18	19	23	20	19.6	20	24	23	21	19	21.4
Mean ±	18.28 ±	17.57 ±	19.0±	22.0±	18.57 ±	19.1 ±	17.6±	24.6±	21.7±	19.6±	17.6±	20.2 ±
SD	1.03	1.05	1.08	1.06	1.05	1.05	0.97	1.06	1.06	1.05	1.03	1.04

Table 3. *Pulse rate of dogs as affected by different anesthetic treatments.*

Time	Xylazine					Mean	Acepromazine					Mean
	Dog-1	Dog-2	Dog-3	Dog-4	Dog-5		Dog-1	Dog-2	Dog-3	Dog-4	Dog-5	
Pre-treat.	78	66	86	92	72	78.8	88	78	82	91	76	83.0
05 min	74	63	81	86	68	74.4	96	74	76	86	72	80.8
15 min	72	61	73	82	63	70.2	98	67	73	82	68	77.6
25 min	67	65	71	80	67	70.0	90	65	69	78	63	73.0
35 min	70	67	76	85	69	73.4	78	69	72	72	60	70.2
45 min	71	72	80	87	68	76.2	79	72	76	76	66	73.8
55 min	80	70	83	88	71	78.4	83	74	79	84	71	78.2
Mean ±	73.1 ±	66.3 ±	78.6 ±	85.7 ±	68.3 ±	74.5 ±	87.4 ±	71.3 ±	75.3 ±	81.3 ±	68.0 ±	76.7 ±
SD	0.99	0.97	1.02	1.02	1.01	1.00	1.03	1.03	1.02	1.04	1.03	1.03

3.3. Pulse Rate

The results pertaining to the pulse rate of dogs given anesthesia with xylazine and acepromazine are shown in Table 3. The data exhibited that the pre-treatment mean (control) values for pulse rate were 78.8 and 83.0 beats per minutes in dogs treated with xylazine and acepromazine, respectively. The mean values for pulse rate of 5 dogs after 5, 15, 25, 35, 45 and 55 min of anesthesia with xylazine was 74.4, 70.2, 70.0, 73.4, 76.2 and 78.4 beats per minute, respectively against pre-treatment pulse rate of 78.8 beats per minute averaging 74.5 beats per minute. Similarly, the mean values for pulse rate of five dogs after 5, 15, 25, 35, 45 and 55 min of anesthesia with acepromazine was 80.8, 77.6, 73.0, 70.2, 73.8 and 78.2 beats per minute, respectively against pre-treatment pulse rate of 83.0 beats per minute averaging 76.7 beats per minute. The results further indicated that after anesthetic treatment of dogs with xylazine, the pulse rate was considerably reduced and reached to a minimum of 70.0 beats per minute after 25 min of treatment against pre-treatment pulse rate of 78.8 beats per minute. However, after 35 min of treatment, the pulse rate again started improving and reached nearly to the base line value (control) after 55 min of anesthetic treatment which was 78.4 beats per minute. It was further observed that after anesthetic treatment of dogs with acepromazine, the pulse rate of dogs was significantly reduced and reached to a minimum of 70.2 beats per minute after 35 min of treatment against pre-treatment pulse rate of 83.0 beats per minute. However, after 45 min of treatment, the pulse rate again started rising and reached to 78.2 beats per minute after 55 min of treatment. However, the pulse rate could not reach to the level of base line value even after 55 min of the treatment. The comparison of anesthetic agents indicated that xylazine treated dogs recovered their pulse rate within 55 min after treatment, while the dogs treated with acepromazine could not recover their pulse (control) even after 55 min of treatment. However, the differences in the pulse rate of dogs as affected by time periods and drugs after treatment were statistically highly.

Table 4. *Onset of sedation in dogs as affected by different anesthetic drugs.*

Dog number	Xylazine treated dogs	Acepromazine treated dogs
1	99 s	126 s
2	107 s	129 s
3	103 s	136 s
4	113 s	138 s
5	93 s	121 s
Mean ± SD	103.00 ± 1.03 s	130.00 ± 1.02 s

Table 5. *Total duration of sedation in dogs as affected by different anesthetic drugs.*

Dog number	Xylazine treated dogs	Acepromazine treated dogs
1	63 min	39 min
2	67 min	41 min
3	68 min	42 min
4	62 min	37 min
5	67 min	40 min
Mean ± SD	65.40 ± 0.97 min	39.80 ± 0.99 min

Significant (P<0.001).

3.4. Onset of Sedation

The observation on onset of sedation in five dogs treated separately with xylazien and acepromazine was also recorded and the results are given in Table 4. It was noted that dog-1, 2, 3, 4 and 5 were anaesthetized by xylazine in 99, 107, 103, 113 and 93 s, respectively; while in case of acepromazine, the dog-1, 2, 3, 4 and 5 were anaesthetized in 126, 129, 136, 138 and 121 s, respectively. On the basis of five dogs, the average onset of sedation in dogs treated with xylazine was 103 s, while in case of acepromazine, the average onset of sedation was recorded in 130 s. It was noted that xylazine was quicker to produce sedation, while acepromazine showed delayed sedation as compared to xylazine. However, both the drugs were effective to produce sedation to the dogs as per the surgical requirements. However, the differences in the onset of sedation in five dogs treated separately with both drugs after treatment was found statistically non-significant (P<0.001).

3.5. Total Duration of Sedation

The data on duration of sedation in five dogs treated separately with xylazine and acepromazine was recorded and the results are given in Table 5. It was noted that the total duration of sedation in dog-1, 2, 3, 4 and 5 was 63, 67, 68, 62 and 67 min, respectively when sedated by xylazine averaging 65.4 min; while in case of acepromazine, the total duration of sedation in dog-1, 2, 3, 4 and 5 was 39, 41, 42, 37 and 40 min, respectively averaging 39.8 min. On the basis of five dogs, the total duration of sedation was higher in dogs treated with xylazine, while the total duration of sedation was well lesser in case of dogs sedated by acepromazine. However, the differences in the total duration of sedation in five dogs treated separately with xylazine and acepromazine after treatment was found statistically significant (P<0.001).

3.6. Degree/Level of Sedation

The data in Table 6 indicated that the mean values for degree of sedation were 2.60 and 1.20 with xylazine and acepromazine in which the time interval was noted through wrist watch in minutes, respectively. The degree of sedation was of medium degree in case of dogs sedated with acepromazine, while xylazine produced relatively deep degree of sedation. With xylazine all the five dogs went into deep sedation, while with xylazine one of the dogs went into relatively medium to deep sedation and remaining four dogs showed signs of moderate sedation. However, the differences in the degree of sedation in five dogs treated separately with xylazine and acepromazine after treatment was found statistically significant (P<0.001).

Table 6. *Degree of sedation in dogs as affected by different anesthetic drugs.*

Dog number	Xylazine treated dogs	Acepromazine treated dogs
1	3	1
2	2	1
3	3	2
4	3	1
5	2	1
Mean ± SD	2.60.00 ± 1.22	1.20.00 ± 1.00

Table 7. *Condition of the dogs sedated with xylazine and acepromazine in relation to other physiological parameters.*

Parameter	Xylazine					Acepromazine				
	Dog-1	Dog-2	Dog-3	Dog-4	Dog-5	Dog-1	Dog-2	Dog-3	Dog-4	Dog-5
Salivation	√	√	√	√	√	√	√	X	√	X
Urination	√	√	√	√	√	X	√	X	X	X
Head dropping	√	√	√	√	√	X	X	√	√	X
Staggering	√	√	√	√	√	√	X	√	X	X
Ped reflexes	√	√	X	X	√	√	√	X	√	√
Eye reflexes	√	X	√	√	√	X	√	X	√	√
Tongue profusion	√	√	√	√	√	√	X	√	X	√
Vomiting	X	X	√	X	X	X	X	X	X	X

3.7. Other Physiological Parameters on Sedation

On sedation of dogs with xylazine and acepromazine, the animals were also examined for salivation, urination, head dropping, staggering, ped reflexes, eye reflexes, tongue profusion and vomiting. It was noted that salivation, urination, head dropping, staggering and tongue profusion was recorded in all the animals treated with xylazine, while one dog showed vomiting condition, while ped reflexes and eye reflexes noted in some dogs and some of them did not show this condition (Table 7). In case of acepromazine

treated dogs, salivation, urination, head dropping, staggering, ped reflexes, eye reflexes and tongue profusion was recorded in almost 50% of the total animals, while condition of vomiting was absent. It was noted that in deep sedation salivation, urination, head dropping, staggering, ped reflexes, eye reflexes, tongue profusion and vomiting generally occurs, which suggests that xylazine produced deep sedation, while acepromazine produced moderate sedation.

4. Discussion

The anesthesia is known as one of the most important practices for surgical operations. Different drugs are mostly used for sedation having varying degree of sedation according the use of nature. For this purpose, the present study was carried out to investigate the comparative effect of xylazine and acepromazine on dogs which showed better results in favor use in animals for sedation. These results are well comparable with those of [15] who used xylazine and acepromazine for sedation of dogs and noted that xylazine which gave protective effect was shown with a low dose of acepromazine; while, [16] showed that xylazine-acepromazine combination did not induce as expected from the product literature. [17] characterized acepromazine and xylazine and reported that the clinical relaxant effects on the proximal portion of the esophagus reported of drugs such as xylazine and acepromazine may be the result of centrally mediated mechanisms. A considerable research has been conducted and published in different international publications on the aspects under study. [18] measured laboratory-quality of dogs anesthetized by xylazine, acepromazine-ketamine and concluded that episcleral venous pressure is unchanged as the disease progresses in the dogs. Similarly, [19] studied the effect of acepromazine maleate, xylazine and thiopentone and reported the influence of premedicant doses of acepromazine maleate or xylazine, and when subsequently anaesthetized with thiopentone. The degree of sedation was of medium degree in case of dogs sedated with acepromazine, while, xylazine produced relatively deep degree of sedation. It was noted that in deep sedation salivation, urination, head dropping, staggering, ped reflexes, eye reflexes, tongue profusion and vomiting generally occurs, which proved that xylazine produced deep sedation. Supporting these findings with the [20] studied comparative effects of sedatives in dogs by giving a clinical dosage of acepromazine and xylazine further suggested that the use of xylazine must be confined to induce a long period sedation or a strong muscle relaxant on a healthy dog. Similarly, [21] evaluated the effect of xylazine as premedication on the onset time and duration of anesthesia in dogs and reported that statistical analysis of the data showed no significant difference between groups in terms of onset and duration of neuromuscular blockage. In another investigation, [22] studied six healthy dogs given anesthesia with xylazine or acepromazine as premedi-cants and reported the time of induction of anesthesia.

During investigation of xylazine and acepromazine in dogs, under *vivo* evaluation observed the pre-treatment mean values for pulse rate/minutes in dogs treated with xylazine and acepromazine. These results are in concurrence with those of [23] who evaluated the effects of acepromazine or xylazine as sedative on physiologic values in dogs and found that sedation, pulse rate, respiratory rate, body temperature and pedal withdrawal reflex were significantly affected. Sedation was greater in dogs receiving xylazine alone, xylazine plus methadone and acepromazine plus methadone. Peak sedative effect occurred within 30 min of treatment administration. Pulse rate was lower in dogs that received xylazine either alone or with methadone during most of the study. In all treatments, body temperature decreased; this effect being more pronounced in dogs receiving methadone alone or in combination with acepromazine. Pedal withdrawal reflex was absent in four dogs receiving methadone plus xylazine but not in any dog in the remaining treatments. Greater sedation was achieved when methadone was used in combination with acepromazine or xylazine. The combination xylazine– methadone appears to result in better analgesia than xylazine administered alone. However, [24] evaluated the dose dependent effects of intramuscular acepromazine-xylazine combinations and showed a decreasing effect on IOP in both right and left eyes following sedation with various doses of acepromazine-xylazine combination with or without atropine.

It is much important after conducting the research work about the facts and figures that the acepromazine caused slightly more decrease in body temperature of dogs as compared with xylazine treated dogs. There is no doubt that both the xylazine and acepromazine were equally, found effective to cause reduction in the respiratory rate of the dogs after treatment. The xylazine treated dogs recovered their pulse rate within 55 min after treatment, while the dogs treated with acepromazine could not recover their pulse (control) even after 55 min of treatment. Xylazine was so quicker to produce sedation, while acepromazine showed delayed sedation as compared to xylazine. However, both the drugs were effective to produce sedation to the dogs as per the surgical requirements. The total duration of sedation was higher in dogs treated with xylazine, while the total duration of sedation was well lesser in case of dogs sedated by acepromazine. The sedation was of medium degree in dogs sedated with acepromazine, while xylazine produced relatively deep degree of sedation. Xylazine may be used for sedation of animal required deep anesthesia for any surgical practice. For moderate degree sedation of animals and for surgical practices, acepromazine may be used.

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