Conference Paper

# The Effect of Frequency Acoustic Stimulation Sound on Intrauterine Weakening of Pregnant Sheep

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## Abstract

Research to determine changes in intrauterine sound pressure in pregnant sheep after administration acoustic stimulation outside of the abdominal wall at some frequency sounds.The study was conducted at the Animal Hospital of Veterinary Faculty of Airlangga University. Pre test experimental design with pre- and post-test one group to assess intra-uterine sound pressure changes. The study was conducted at two lambs pregnant aterm after acoustic stimulation at a distance of 10 cm from the surface of the abdominal wall to the sound pressure 80,85,90,95 and 100 decibels and sound frequency of 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 6000 and 8000 hertz. The results showed that the difference between the sound pressure outside of the abdominal wall with intrauterine sound pressure on both the pregnant sheep by an average of 16.7570 ± 8.0797 decibels. This shows their weakening sound after passing through the abdominal wall and the uterine wall. By using a paired t-test, this weakening statistically significant. At frequencies from 31.5 to 1000 hertz weakening values from 5.2 to 17.1 decibels while in 2000-8000 hertz frequency weakening value of 20.2 to 30.8 decibels. The conclusion that the stimulation of noise from outside the walls of the abdomen weakening sound after penetrating the abdominal wall and the uterine wall. Weakening occur at every level of sound pressure and at every level of a given frequency. Weakening value becomes greater at frequencies above 1000 hertz.

**Keywords:** weakening, sound pressure, sound frequency, pregnant sheep.

## 1. Introduction

The use of sound waves in medicine technology provides a very large role as well as utilizing ultrasound sound waves by using high-frequency, ultrasonic pulses pounding surface of body mass and the pulses are partially reflected and partially transmitted. Pulses reflected when the difference of density that is reflected by the tissues, bones and body fluids with different density [1]. Flipped ultrasonic pulses are emitted can produce pictures of the inside of the body on the oscilloscope screen with intermediaries probe placed on the skin surface. While the use of sound waves audiosonic is now a growing realization that in fact the fetus in the womb and the environment have the ability interaction is more than expected people in general that the stimulus sounds or music can reduce the number of processes of cell death of brain nerve physiology (apoptosis) and to improve the relationship between brain nerve cells (dendrites and myelin) that includes experience-induced morphological changes regularly so the baby at birth has nerve cells and cell connections are more than those without experience enrichment [2].

The amount of acoustic energy that penetrates into the uterus in a pregnant condition is very important to know, the fetus develops in the acoustic environment that is filled with the sounds produced by the parent respiratory, intestinal activity, heart rate and the sound of voices outside of the neighborhood [3].

Peters [4] calculating the sound pressure level of intra-abdominal generated by a vibrator that is placed directly on the abdomen sheep. Sound with high frequencies (> 1000 Hz) will cause the sound pressure is reduce to a lesser degree greater than the low-frequency sound (10-1000 Hz). Low frequency seems to cause the abdomen and its contents to vibrate entirely, where the high-frequency vibration is reduced as a function of distance from the vibrator [5]. In the procedure of stimulation vibroacoustic required transmission stimulation through media complex, non-homogenous composed of tissue with a density that is different, the stimulation is done through the skin, abdominal wall, the possibility of the pubic bone mains, the wall of the uterus, amniotic fluid and eventually through the tools of complex ear fetus [6].

Determining the distribution of the sound pressure in the uterus may be useful for the determination of intrauterinene noise standards as may be necessary to protect the fetus from the power of the noise that is exposed. Thus the warning and protection required for the provision of fetal exposure to sound pressure of an acoustic stimulus strength or noise generated outside the abdominal wall of the pregnant mother [3, 8]. The study was conducted to investigate the changes in sound pressure intrauterinene pregnant sheep after administration acoustic stimulation outside of the abdominal wall at some frequency sound.

## 2. Material and Methode

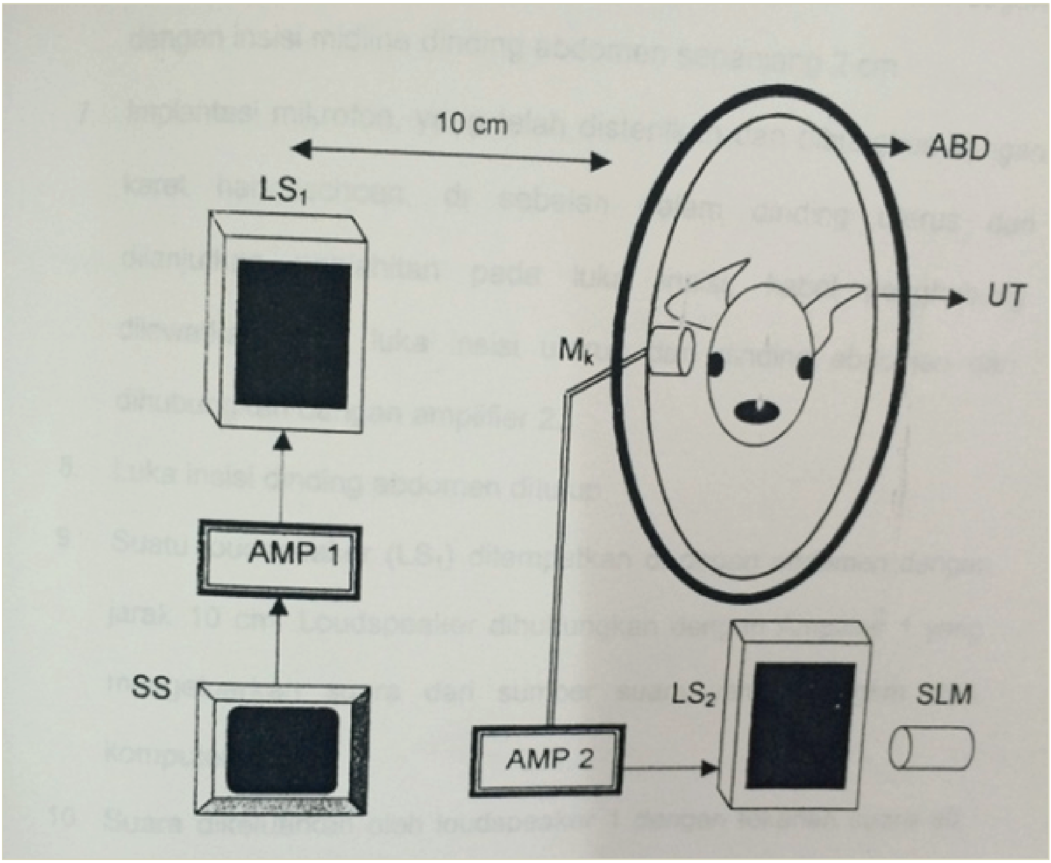


**Figure** 1: Shows the schematic arrangement of a research instrument.

## 2.1. Animal Research

Used 2 lambs weighing 24 Kg and 41 Kg, aged 2-3 years in a state of full-term pregnant (old / age pregnancy in sheep on average 5 months) with a healthy condition of the mother and fetus.

## 2.2. Research Methods and Technical Experimentation

Note: ABD: abdominal wall, UT: uterine wall, SS: a sound source of a computer program, LS1,LS2: Loudspeaker, Mk: microphones placed in the uterine wall, AMP 1.2: amplifier

SLM: Sound level meter

1. Do epilation on the abdomen of a sheep studied, then anesthetized with ketamine administration and infusion with Ringer Lactate through vein of radial on the front foot.

2. The incision in the abdominal wall in the area along the midline 5 cm to achieve intra-abdominal cavity and then locate the uterus and uterine incision is then performed on the ventral part of the 2 cm midline incision in line with the abdominal wall.

3. Implantation of a microphone that has been sterilized and draped with sterile glove on the inside wall of the uterus and the incision is sewn while connecting cables pass through the incision of the uterus and the abdominal wall is then connected to the amplifier 2. Further abdominal wall incision closed.

4. Loudspeaker 1 is placed in front of the abdomen with a distance of 10 cm, connected loudspeaker 1 with amplifier 1 that emit sound from the sound source that is programmed by computer. Sound emitted by the loudspeaker 1 with a sound pressure of 80, 85, 90, 95, 100 decibels and frequencies of 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 6000, 8000 Hertz.

5. Voice in the uterus were recorded on a microphone included in amplifier 2 and ejected through the loudspeaker 2. The sound issued loudspeaker 2 sound pressure is measured using a sound level meter at a distance of 10 cm.

### 2.3. Data Analysis

The data obtained are recorded in the table and do the tabulation of data collectors, and then analyzed the data using: paired samples t test (paired t-test) and a one-way ANOVA Test.

## 3. Results

The results were obtained in the first phase has been examined intrauterine basic sound pressure without acoustic stimulation from the outside of the abdomen. Recording sound spectrum intrauterine base in sheep lamb 1 and 2 have been accomplished through sound forge 5.0 and XP sound spectrum analysis. The recordings on the selected frequency shown in table 1 and Figure 2. In the sound spectrum analysis, basic sound pressure intrauterine sheep 1 ranges from 44-56 decibels on the selected frequency. While the basic sound pressure intrauterine sheep 2 range 43-58 decibels on the selected frequency. The dominant voice is heard on the recording process comes from the sound of fetal heartbeat, sometimes interspersed with the sound emanating from the intestinal peristalsis.

A second stage is measuring intrauterine voice to acoustic stimulation outside of the abdominal wall to the sound pressure and frequency selected. Stimulation of the votes were cast at a distance of 10 cm from the abdominal wall of sheep, while the measurement of sound pressure intrauterine performed using a sound level meter at

Table 1: Spectrum of intrauterine basic sound of sheep 1 and 2.

| | | Frekuensi (Hz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 6000 | 8000 |
| Intrauterine basic sound pressure (dB) | sheep I | 49 | 56 | 47 | 54 | 52 | 53 | 53 | 50 | 48 | 44 |
| | sheep II | 56 | 58 | 52 | 58 | 56 | 54 | 45 | 44 | 43 | 43 |

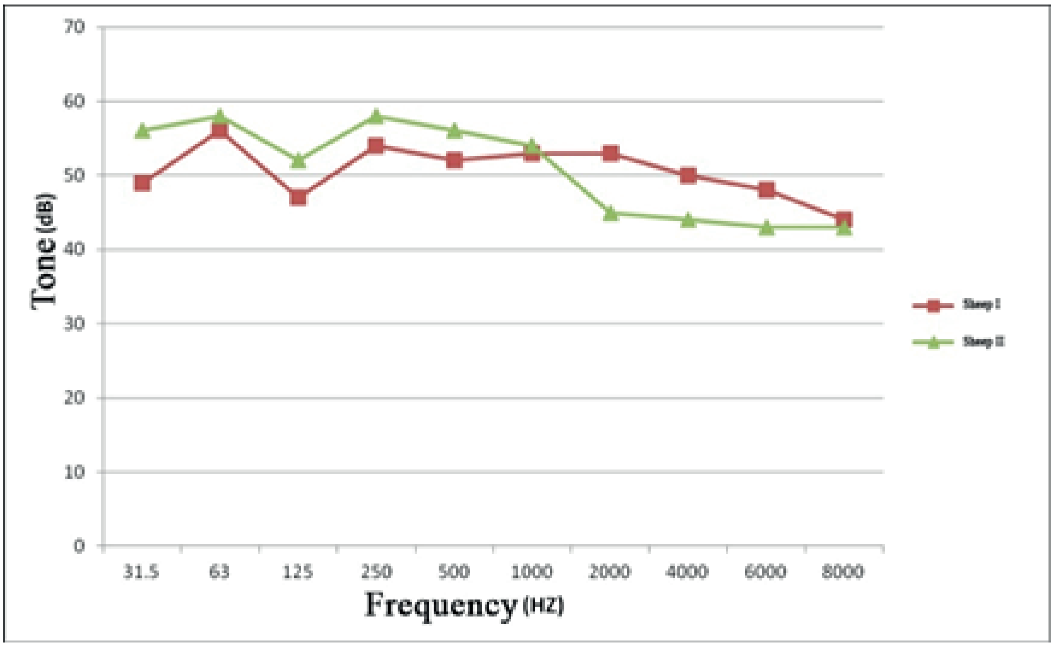


**Figure** 2: Spectrum intrauteri basic sound of sheep 1 and 2.

a distance of 10 cm from the loudspeaker 2. The results are shown in Table 2-4 and chart 3-5.

Table 2: Sound pressure intrauterinene sheep 1 (dB).

| Sound pressure (dB) of the sound source | Intrauterine sound pressure (dB) at a frequency (Hertz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 6000 | 8000 |
| 80 | 72.1 | 70.2 | 73.3 | 73.4 | 75.1 | 70.8 | 57.7 | 55.8 | 56.6 | 60.1 |
| 85 | 75.6 | 74.4 | 77.1 | 75.4 | 77.3 | 72.4 | 61.9 | 58.7 | 61.4 | 61.6 |
| 90 | 78.8 | 78.2 | 78.6 | 76.6 | 77.6 | 72.1 | 62.8 | 61 | 62.1 | 62.9 |
| 95 | 84.3 | 85.6 | 84 | 81.3 | 83.1 | 75.4 | 69.8 | 63.3 | 64.2 | 64.3 |
| 100 | 86 | 89.1 | 92.2 | 87.2 | 90.9 | 86.3 | 73.1 | 68.9 | 69.2 | 67.8 |

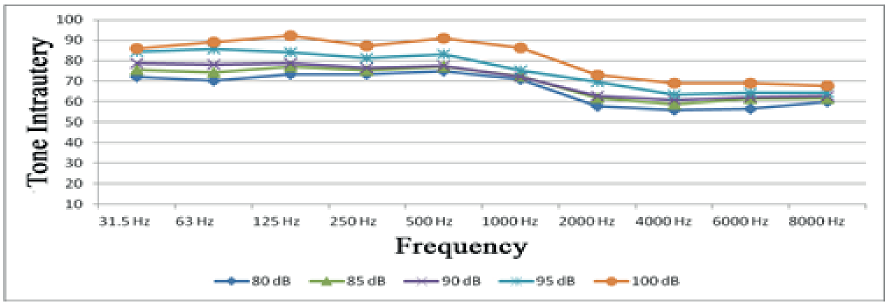


**Figure** 3: Graph weakening voice in sheep 1.

Table 3: Sound pressure intrauterinene Sheep 2 (dB).

| Sound pressure (dB) of the sound source | Intrauterine sound pressure (dB) at a frequency (Hertz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 6000 | 8000 |
| 80 | 73.4 | 72.2 | 73.8 | 70.4 | 74.4 | 70.7 | 58.4 | 57 | 56.7 | 59.5 |
| 85 | 74.2 | 74 | 78.3 | 76.2 | 74.9 | 76.3 | 61.8 | 62.1 | 62.9 | 64.2 |
| 90 | 78.9 | 78.1 | 78.7 | 77 | 77.1 | 77.4 | 64 | 65.4 | 65.2 | 65.6 |
| 95 | 84.9 | 84.8 | 84.6 | 83.2 | 83.6 | 80.4 | 71.4 | 66.3 | 64.5 | 67.2 |
| 100 | 86.4 | 90 | 91.4 | 88.2 | 88.6 | 84.1 | 74.6 | 70.8 | 72.3 | 70.6 |

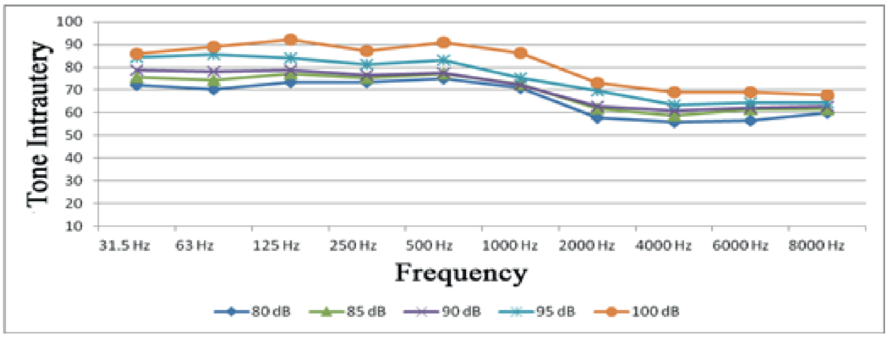


**Figure** 4: Graph weakening vote on sheep 2.

Intrauterine sound pressure measured at 1 experienced weakening sheep at all sound pressure level and at all levels of frequency. Weakening greater sound pressure level at frequencies above 1 000 decibels.

As with sheep 1, the measurement of sound pressure intrauterine sheep weakening 2 also occurs at all levels of sound pressure and at all levels of frequency. Weakening also greater at frequencies above 1 000 decibels.

On average measurement sheep 1 and 2 have the same weakening at all sound pressure level and all levels of frequency.

The difference between the sound pressure outside of the abdominal wall with intrauterine sound pressure on both sheep of 16.7570 ± 8.0787 decibels. This indicates

Table 4: Average intrauterinene sound pressure in sheep 1 and 2 (dB).

| Sound pressure (dB) of the sound source | Average intrauterine sound pressure (dB) at a frequency (Hertz) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 31.5 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 6000 | 8000 |
| 80 | 72.8 | 71.2 | 73.6 | 71.9 | 74.8 | 70.8 | 58.1 | 56.4 | 56.7 | 59.8 |
| 85 | 74.9 | 74.2 | 77.7 | 75.8 | 76.1 | 74.4 | 61.9 | 60.4 | 62.2 | 62.9 |
| 90 | 78.9 | 78.2 | 78.7 | 76.8 | 77.4 | 74.8 | 63.4 | 63.2 | 63.7 | 64.3 |
| 95 | 84.6 | 85.2 | 84.3 | 82.3 | 83.4 | 77.9 | 70.6 | 64.8 | 64.4 | 65.8 |
| 100 | 86.2 | 89.6 | 91.8 | 87.7 | 89.8 | 85.2 | 73.9 | 69.9 | 70.8 | 69.2 |

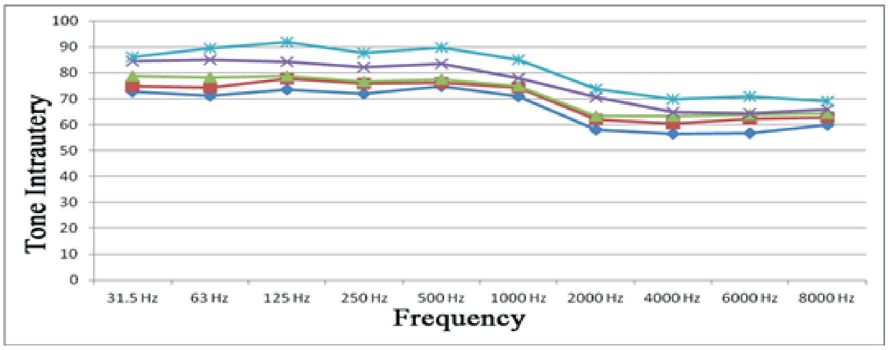


**Figure** 5: Graph average weakening voice in sheep 1 and 2.

that the stimulation noise outside wall abdomen experience weakening sound pressure after passing through the abdominal wall and uterus wall of sheep. Statistically by paired t-test showed that weakening the sound pressure is significant.

In the table of 6,7,8,9 and 10 give a detailed description of the sound pressure weakening intrauterine after stimulation acoustic sound pressure outside of the abdominal wall of 80,85,90,95, and 100 decibels. These measurements were performed at selected frequencies in frequency 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 6000, and 8000 Hertz. At all levels of sound pressure stimulation provided, occurred weakening after the sound across the abdominal wall and the uterine wall. Value weakening sound

Table 5: The level of sound pressure in sheep weakening 1 and 2 (dB).

| | N | Mean ± SD | statistic test |
|---|---|---|---|
| The sound pressure of the sound source (dB) | 50 | 90 ± 7.1429 | P=0.000 (S)* |
| intrauterine sound pressure (dB) | 50 | 73.243 ± 9.3531 | |
| The sound pressure of the sound source - intrauterine sound pressure (dB) | 50 | 16.757 ± 8.0787 | |
| *S = significant, paired t-test, two tail, α = 0,05 | | | |

Table 6: weakening sound in sheep I and sheep II second at 80 dB sound pressure.

| Frequency (Hertz) | sound pressure (dB) | | | | pelembekan (dB) | | |
|---|---|---|---|---|---|---|---|
| | Outer | Intrauterine sheep I | Intrauterine sheep II | Average Intrauterine | sheep I | sheep II | Average |
| 31.5 | 80 | 72.1 | 73.4 | 72.8 | 7.9 | 6.6 | 7.2 |
| 63 | 80 | 70.2 | 72.2 | 71.2 | 9.8 | 7.8 | 8.8 |
| 125 | 80 | 73.3 | 73.8 | 73.6 | 6.7 | 6.2 | 6.4 |
| 250 | 80 | 73.4 | 70.4 | 71.9 | 6.6 | 9.6 | 8.1 |
| 500 | 80 | 75.1 | 74.4 | 74.8 | 4.9 | 5.6 | 5.2 |
| 1000 | 80 | 70.8 | 70.7 | 70.8 | 9.2 | 9.3 | 9.2 |
| 2000 | 80 | 57.7 | 58.4 | 58.1 | 22.3 | 21.6 | 21.9 |
| 4000 | 80 | 55.8 | 57 | 56.4 | 24.2 | 23 | 23.6 |
| 6000 | 80 | 56.6 | 56.7 | 56.7 | 23.4 | 23.4 | 23.3 |
| 8000 | 80 | 60.1 | 59.5 | 59.8 | 19.9 | 20.5 | 20.2 |

Table 7: Weakening sound in sheep I and sheep II second at at 85 dB sound pressure.

| Frequency (Hertz) | sound pressure (dB) | | | | pelembekan (dB) | | |
|---|---|---|---|---|---|---|---|
| | Outer | Intrauterine sheep I | Intrauterine sheep I | Average intrauteri | sheep I | sheep II | Average |
| 31.5 | 85 | 75.6 | 74.2 | 74.9 | 9.4 | 10.8 | 10.1 |
| 63 | 85 | 74.4 | 74 | 74.2 | 10.6 | 11 | 10.8 |
| 125 | 85 | 77.1 | 78.3 | 77.7 | 7.9 | 6.7 | 7.3 |
| 250 | 85 | 75.4 | 76.2 | 75.8 | 9.6 | 8.8 | 9.2 |
| 500 | 85 | 77.3 | 74.9 | 76.1 | 7.7 | 10.1 | 8.9 |
| 1000 | 85 | 72.4 | 76.3 | 74.4 | 12.6 | 8.7 | 10.6 |
| 2000 | 85 | 61.9 | 61.8 | 61.9 | 23.1 | 23.2 | 23.1 |
| 4000 | 85 | 58.7 | 62.1 | 60.4 | 26.3 | 22.9 | 24.6 |
| 6000 | 85 | 61.4 | 62.9 | 62.2 | 23.6 | 22.1 | 22.8 |
| 8000 | 85 | 61.6 | 64.2 | 62.9 | 23.4 | 20.8 | 22.1 |

of sheep 1 at frequencies up to 1000 hertz range 4.9-19.6 decibels. While the value of one sheep weakening sound at frequencies above 1000 hertz range 19.9-32.2 decibels. Weakening sound of sheep 2 at frequencies up to 1000 hertz range 5.6-15.9 decibels, and at frequencies above 1000 hertz range 20.5-30.5 decibels.

Table 8: weakening sound in sheep I and sheep II second at 90 dB sound pressure.

| Frequency (Hertz) | sound pressure (dB) | | | | pelembekan (dB) | | |
|---|---|---|---|---|---|---|---|
| | Outer | Intrauterine sheep I | Intrauterine sheep I | Average intrauteri | sheep I | sheep II | Average |
| 31.5 | 90 | 78.8 | 78.9 | 78.9 | 11.2 | 11.1 | 11.1 |
| 63 | 90 | 78.2 | 78.1 | 78.2 | 11.8 | 11.9 | 11.8 |
| 125 | 90 | 78.6 | 78.7 | 78.7 | 11.4 | 11.3 | 11.3 |
| 250 | 90 | 76.6 | 77 | 76.8 | 13.4 | 13 | 13.2 |
| 500 | 90 | 77.6 | 77.1 | 77.4 | 12.4 | 12.9 | 12.6 |
| 1000 | 90 | 72.1 | 77.4 | 74.8 | 17.9 | 12.6 | 15.2 |
| 2000 | 90 | 62.8 | 64 | 63.4 | 27.2 | 26 | 26.6 |
| 4000 | 90 | 61 | 65.4 | 63.2 | 29 | 24.6 | 26.8 |
| 6000 | 90 | 62.1 | 65.2 | 63.7 | 27.9 | 24.8 | 26.3 |
| 8000 | 90 | 62.9 | 65.6 | 64.3 | 27.1 | 24.4 | 25.7 |

Table 9: weakening sound in sheep I and sheep II second at 95 dB sound pressure.

| Frequency (Hertz) | sound pressure (dB) | | | | Pelembekan (dB) | | |
|---|---|---|---|---|---|---|---|
| | outer | Intrauterine sheep I | Intrauterine sheep I | Average intrauteri | sheep I | sheep II | Average |
| 31.5 | 95 | 84.3 | 84.9 | 84.6 | 10.7 | 10.1 | 10.4 |
| 63 | 95 | 85.6 | 84.8 | 85.2 | 9.4 | 10.2 | 9.8 |
| 125 | 95 | 84 | 84.6 | 84.3 | 11 | 10.4 | 10.7 |
| 250 | 95 | 81.3 | 83.2 | 82.3 | 13.7 | 11.8 | 12.7 |
| 500 | 95 | 83.1 | 83.6 | 83.4 | 11.9 | 11.4 | 11.6 |
| 1000 | 95 | 75.4 | 80.4 | 77.9 | 19.6 | 14.6 | 17.1 |
| 2000 | 95 | 69.8 | 71.4 | 70.6 | 25.2 | 23.6 | 24.4 |
| 4000 | 95 | 63.3 | 66.3 | 64.8 | 31.7 | 28.7 | 30.2 |
| 6000 | 95 | 64.2 | 64.5 | 64.4 | 30.8 | 30.5 | 30.6 |
| 8000 | 95 | 64.3 | 67.2 | 65.8 | 30.7 | 27.8 | 29.2 |

Source weakening voice at every level of the sound pressure of the sound sources by an average of 16.7570 ± 8.0787 decibels. Statistically by One-way ANOVA flabbiness level is not meaningful, it indicates that the level weakening to each level of sound pressure from outside is no different magnitude.

Table 10: weakening one voice in sheep 1 and 2 to the sound pressure of 100 Db.

| Frequency (Hertz) | sound pressure (dB) | | | | Pelembekan (dB) | | |
|---|---|---|---|---|---|---|---|
| | outer | Intrauterine sheep I | Intrauterine sheep I | Average intrauteri | sheep I | sheep II | Average |
| 31.5 | 100 | 86 | 86.4 | 86.2 | 14 | 13.6 | 13.8 |
| 63 | 100 | 89.1 | 90 | 89.6 | 10.9 | 10 | 10.4 |
| 125 | 100 | 92.2 | 91.4 | 91.8 | 7.8 | 8.6 | 8.2 |
| 250 | 100 | 87.2 | 88.2 | 87.7 | 12.8 | 11.8 | 12.3 |
| 500 | 100 | 90.9 | 88.6 | 89.8 | 9.1 | 11.4 | 10.2 |
| 1000 | 100 | 86.3 | 84.1 | 85.2 | 13.7 | 15.9 | 14.8 |
| 2000 | 100 | 73.1 | 74.6 | 73.9 | 26.9 | 25.4 | 26.1 |
| 4000 | 100 | 68.9 | 70.8 | 69.9 | 31.1 | 29.2 | 30.1 |
| 6000 | 100 | 69.2 | 72.3 | 70.8 | 30.8 | 27.7 | 29.2 |
| 8000 | 100 | 67.8 | 70.6 | 69.2 | 32.2 | 29.4 | 30.8 |

Table 11: Levels weakening sound at every level of the sound pressure of the sound.

| sound pressure (dB) | N | mean ± SD | minimum | maximum | uji statistik |
|---|---|---|---|---|---|
| 80 | 10 | -13.4200 ± 7.7560 | -23.60 | -5.25 | P = 0.481 (NS)* |
| 85 | 10 | -14.9650 ± 7.1594 | -24.60 | -7.30 | |
| 90 | 10 | -18.0950 ± 7.2210 | -26.80 | -11.15 | |
| 95 | 10 | -18.6900 ± 8.9356 | -30.65 | -9.80 | |
| 100 | 10 | -18.6150 ± 8.0787 | -30.80 | -8.20 | |
| total | 50 | -16.7570 ± 8.0787 | -30.80 | -5.25 | |

While weakening frequency sound at every level of magnitude is the same, namely, 16.7570 ± 8.0787 decibels, but the distribution is uneven. This is because weakening sound at frequencies above 1000 hertz value is greater than the weakening sound at a frequency of ≤ 1000 hertz. With one-way ANOVA test this weakening statistically different.

# 4. Discussion

Table 12: Levels weakening voice at every level of the frequency of the sound source.

| Frequency (Hertz) | N | Mean ± SD | Minimum | Maksimum | Uji Statistik |
|---|---|---|---|---|---|
| 31.5 | 5 | -10,5400 ± 2,3472 | -13.80 | -7.25 | P = 0,000 (S)* |
| 63 | 5 | -10,3400 ± 1,1366 | -11.85 | -8.80 | |
| 125 | 5 | -8,8000 ± 2,1357 | -11.35 | -6.45 | |
| 250 | 5 | -11,1100 ± 2,3012 | -13.20 | -8.10 | |
| 500 | 5 | -9,7400 ± 2,8828 | -12.65 | -5.25 | |
| 1000 | 5 | -13,4100 ± 3,3112 | -17.10 | -9.25 | |
| 2000 | 5 | -24,4500 ± 1,9656 | -26.60 | -21.95 | |
| 4000 | 5 | -27, 0700 ± 3,0618 | -30.20 | -23.60 | |
| 6000 | 5 | -26,4900 ± 3,4660 | -30.65 | -22.85 | |
| 8000 | 5 | -25,6200 ± 4,5220 | -30.80 | -20.20 | |
| Total | 50 | -16.7570 ± 8.0787 | -30.80 | -5.25 | |

## 4.1. Sounds basic intrauterine

Intrauterine environment is filled with the sounds of breathing mother and intestinal activity, heart rate, noise from outside the abdominal wall. Intrauterine sound pressure of 100 decibels will cause a different response of the fetus when compared with the sound pressure level of 100 decibels through the air in the baby already born. There are two factors that support this distinction, the first is the transfer of acoustic energy from the environment into the ear fluid in the fetus is entirely different from the transfer of acoustic energy through the medium of air into the ear. Second, the fluid medium acoustic energy particles-particles undergo prisoners denser where energy acoustics can change the pressure and velocity of particles, whose magnitude depends on the density and elasticity [3, 7].

Intrauterine basic noise in the recording process in sheep 1 and 2 showed their dominance in the fetal cardiovascular dynamics are sound and fetal heart rate at any time this voice punctuated by the sound of the intestinal peristaltic activity of ewes. On the basis of the sound spectrum analysis using the intrauterine 31.5-8000 hertz frequency, sheep 1 has a basic sound pressure ranges from 44-56 decibels, whereas sound basic intrauterine pressure ranges from 43-58 decibels sheep 2. Both have almost the same value despite the difference in weight is large enough that 17 kilograms. Possible dimensions of the uterine cavity between both sheep are not affected by body weight and therefore do not affect the basic sound intrauterine. This is according to research conducted [4] which showed that intrauterine basic sound pressure at 50-5000 hertz frequency is below 60 decibels and the results of the above can be expressed intrauterine environment in sheep pregnant or not pregnant is not silent and whose value obtained intrauterine noise below 60 decibels [7].

## 4.2. Weakening sound

1 occurs in sheep weakening at all sound pressure level of stimulation and at all levels of the increased frequency with an average of 17 248 weakening decibels. Value weakening sound of sheep 1 at frequencies up to 1000 hertz range 4.9-19.6 decibels, while the value of sheep weakening 1 at frequencies above 1000 hertz range 19.9-32.2 decibels. in sheep weakening 2 also occurs at all levels and all levels of sound frequencies, where the average weakening amounted to 16 268 decibels. Weakening sound of sheep 2 at frequencies up to 1000 hertz range 5.6-15.9 decibels and at frequencies above 1000 hertz range 20.5-30.5 decibels. Weakening pattern graphically on lamb 1 and 2 is almost the same happens weakening greater at frequencies above 1000 hertz. If the value weakening sound from both sheep averaged meal weakening rate of 16.7570 decibels. And with paired samples t-test proved that this weakening statistically significant [8].

Weakening smaller sound level at 31.5-1000 hertz frequency caused by the acoustic stimulation using frequencies up to 1000 hertz cause abdomen and contents vibrating, thus improving sound transmission as stated by Peters [7] whereas at high frequencies (> 1000 Hz) will cause the sound pressure is reduced at a much greater degree than in a low voice (10-1000 Hz) due to acoustic stimulation at higher frequencies will reduce the vibration of the abdomen and its contents [7].

According to Richards [1] on measuring the noise level no influence on the frequency of sound transmission into the uterus. weakening obtained an average of 3.7 decibels at a frequency of 0.125 kilohertz. With weakening progressively increased until the frequency of 4 kilohertz, where the average weakening of 10.0 decibels. While the research conducted on sheep showed that the level at low frequencies (below 0:25 kilohertz) is reduced up to 5 decibels and the noise level high frequency (above 2.0 kilohertz) is reduced to a maximum of 20 decibels. Although no effect on the frequency of the sound weakening but there are variations in the amount of weakening possibly caused by the thickness of the abdominal wall, the parent body weight, as well as fluid volume of the placenta. And research on pregnant sheep proves that this factor has a value that is relatively homogeneous [4].

Comparison weakening sound levels according to levels of sound pressure of the sound source which does not differ much between 13.4200 to 18.6900 decibel decibels with an average of 16.7570 weakening decibels, this suggests that the magnitude of noise weakening not affected by the magnitude of sound pressure stimulation. Any given sound pressure will provide a level weakening the same size at the same frequency with a one-way ANOVA test proved that this weakening not statistically different. While the comparison of the level of sound weakening according to levels of between 8,800 decibel frequencies up to 27.0700 decibels with an average of 16.7570 decibels weakening magnitude but its distribution is uneven. This is because weakening sound at frequencies above 1000 hertz value is greater than the weakening sound at a frequency of $\leq$ 1000 hertz. By performing one-way ANOVA test this weakening statistically different.

## 5. Conclussion

In the uterine cavity is not an isolated element, but no sound comes from the intrauterine stem respiratory, intestinal activity, heart sounds, and the sounds from outside the abdominal wall. Sound stimulation from the outside wall of the abdomen weakening sound after penetrating the abdominal wall and the wall of the uterus with the voting on the sound pressure 80,85,90,95, and 100 decibels. And at a frequency of 31.5, 63.125, 250, 500, 1000, 2000, 4000, 6000, and 8000 hertz weakening obtained at all levels of sound pressure and frequency at all levels. In 31.5-1000 hertz frequency weakening lower noise occurs while on 1000-8000 hertz frequency occurs weakening larger.

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