Semen evaluation
Semen examination
Semen assessment

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Indication and aims of semen evaluation

1- Breeding soundness examination of the male

To predict the fertility of the bull

2- To judge the quality of the ejaculate after collection

• Suitable to be used for semen processing
• How many dose can be made from this ejaculate

3- To judge the equality of semen sample after processing

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Precaution that must be taken to get accurate result during semen evaluation

1- Before and during collection

• Avoid over use or prolonged rest

• Avoid collection of sample after prolonged stress condition

• Collection of semen must be done under the optimum condition

• The sample must be entire representative sample

2- During transportation

• Must be transported as quickly as possible

• Avoid exposure to abnormal temperature or direct sun light

• Avoid excessive agitation

3- During Examination

• Must be done as quickly as possible

• Must be done under optimum conditions

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Methods for semen evaluation

I-Gross or macroscopical examination

II-Microscopical examination

III- Evaluation of hygienic quality

IV- Estimation of metabolic activity

V-Resistance to environmental changes

DNA integrity

Acrosome reaction assay

Zona pellucida sperm binding

Zona free oocyte penetration assay

Cervical mucus penetration test

Ability of the sperm to fertilize the ovum in vitro

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I-Gross or macroscopical examination

1- Volume

Bull (2-8 mL)
Buffalo-bull (1-6 mL)
Ram (0.5-1 mL)
Stallion (50-150 mL)
Boar (150-250 mL)
Camel-bull (2-10 mL)
Dog (1-25 mL)

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Factor affecting the volume of semen sample

1- Breed  
2- Age  
3- Nutritional condition  
4- Body condition  
5- Season  
6- Pathological condition include mainly the accessory sex glands  
7- Method of semen collection  
8- Teasing procedures before semen collection  
9- Frequency of semen collection

Causes of abnormal volume of semen sample

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2- Color and opacity

Bull
- opaque whitish to yellowish

Buffalo-bull
- opaque white

Ram
- opaque white

Stallion
- Translucent grayish white

Boar
- Translucent grayish white

Camel-bull
- Varied from translucent gray to opaque white

Dog
- Translucent gray to white

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What is the abnormal color and its indication?

- red or pink
- Dark red or brown
- Yellow or purulent
- Greenish
- Dirty gray (grayish)
- Dark gray

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3- Density or viscosity
Normal semen density in different animal

- **Bull (creamy)**
- **Ram (creamy)**
- **Camel-bull (watery to milky)**
- **Stallion (Watery to viscous)**
- **Boar (Watery to viscous)**
- **Dog (Watery to viscous)**

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The correlation between the semen density and the concentration

The Russian method

<table>
<thead>
<tr>
<th>Density</th>
<th>Description</th>
<th>Approximate concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>d</td>
<td>Thin sample, almost watery sperm concentration</td>
<td>Up to 400,000 /mm³</td>
</tr>
<tr>
<td>dd</td>
<td>Creamy sample with large number of sperm</td>
<td>400,000-1,000,000 / mm³</td>
</tr>
<tr>
<td>ddd</td>
<td>Thick creamy sample with very large number of sperm</td>
<td>More than 1,000,000 /mm³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Color</th>
<th>Density</th>
<th>Approximate concentration/mm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creamy</td>
<td>3</td>
<td>More than 1,000,000</td>
</tr>
<tr>
<td>Thick milky</td>
<td>2</td>
<td>500,000 - 1,000,000</td>
</tr>
<tr>
<td>Milky</td>
<td>1</td>
<td>200,000 - 500,000</td>
</tr>
<tr>
<td>Watery</td>
<td>0</td>
<td>Less than 200,000</td>
</tr>
</tbody>
</table>

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## 4- Presence of foreign body

<table>
<thead>
<tr>
<th>Sources</th>
<th>Foreign body</th>
<th>Method of diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Male genital tract</td>
<td>Inflammatory cell</td>
<td>Yellow color, Falk of pus, stained film</td>
</tr>
<tr>
<td></td>
<td>RBS</td>
<td>Red or brown color, stained film</td>
</tr>
<tr>
<td></td>
<td>Prespermic cells</td>
<td>Dirty gray color, stained film</td>
</tr>
<tr>
<td>2- Prepuce</td>
<td>Hair and fecal matter</td>
<td>Green color</td>
</tr>
<tr>
<td>3- Artificial vagina</td>
<td>Lubricant material, microorganism</td>
<td>Clots of lubricant material, fresh film</td>
</tr>
<tr>
<td>4- Site of collection</td>
<td>Dusts and dirt's</td>
<td>Dark gray color</td>
</tr>
</tbody>
</table>

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5- Gross motility
II- Measuring of the pH

Bull 6.4 - 6.9
Buffalo-bull 6.4 - 6.9
Ram 5.9 - 6.3
Stallion 7 - 7.8
Boar 6.9 - 7.9
Dog 6 - 6.8
Camel-bull 7.6 - 8

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