X+V Factor discs

Used for the presumptive identification of *Haemophilus* species on the basis of their requirements for X or V factors or both.

**Directions**

Inoculate the surface of a Blood Agar (M073) plate or Brain Heart Infusion Agar (M211) plate with the test organisms by either streaking or surface spreading. Aseptically place the X (DD020), V (DD021) and X+V (DD022) factor discs on the plate, in the following positions:

- Disc Position on the Agar plate
  - X factor disc 12 O’clock
  - V factor disc 4 O’clock
  - X+V factor disc 8 O’clock

Incubate the plates at 35 - 37°C for 24 - 48 hours. Observe for the growth in the neighbourhood of the discs.

**Principle And Interpretation**

Both X and V factors are growth factors that are essential for certain organisms like *Haemophilus* species and also enhance growth of organisms like *Neisseria* species.

X+V factor discs are the sterile filter paper discs impregnated with growth factors X (>_<) V which are used for differentiating *Haemophilus* species in conjunction of X factor & V factor discs. *Bordetella* and *Haemophilus* species can also be identified on the basis of the requirement of X and V growth factors in the basal medium.

The X factor (hemin) and V factor (Coenzyme- Nicotinamide adenine dinucleotide NAD+) are impregnated on the sterile filter paper discs of diameter 6 mm.

The test organism requiring X factor alone, grows only in the vicinities of X and X+V factor discs. Those which require V factor alone grow in the vicinities of V and X+V factor discs. If both X and V factors are required, then the organism will grow only in the vicinity of the X+V factor discs. This satellite growth is seen around the disc promoting growth (1).

**Quality Control**

**Appearance**

Filter paper discs of 6 mm diameter bearing letters “X+V” in continuous printing style.

**Cultural response**

Cultural characteristics observed on Brain Heart Infusion Agar (M211) or Blood Agar Base (M073) after an incubation of 24-48 hours at 35-37°C.

<table>
<thead>
<tr>
<th>Organism</th>
<th>Growth with X+V factor</th>
<th>Growth without growth factor</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bordetella pertussis</em> ATCC 8467</td>
<td>Positive (initial isolation on Bordet Gengou Agar (M175))</td>
<td>Positive (initial isolation on Bordet Gengou Agar (M175))</td>
</tr>
<tr>
<td><em>Haemophilus influenzae</em> ATCC 35056</td>
<td>Positive</td>
<td>Negative</td>
</tr>
<tr>
<td><em>Haemophilus parainfluenzae</em> ATCC 7901</td>
<td>Positive</td>
<td>Negative</td>
</tr>
</tbody>
</table>
**Haemophilus**

*haemoglobinophilus*  
ATCC19416  
*Haemophilus ducreyi*  
Positive   Negative

**Storage and Shelf Life**
Store below -10°C. Use before the expiry date on the label.

**Reference**

Note:
Use known strains of *Haemophilus influenzae* to monitor the performance of the differentiation discs and the medium. Do not use too heavy suspension of the test organisms as X or V factor carryover from the primary growth medium may take place

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