Chapter 10
SPECTROSCOPIC ANALYSIS OF THE BLOOD DOPED EXTRACTS

The blood doped extracts were studied by using CECIL CE7500 7000 SERIES double beam Spectrophotometer. The instrument was calibrated before starting experiment.

9.1 Procedure:
1. All the medicinal plant extracts were washed with distilled water and blended thoroughly to prepare solution. The filtrate of the blend was taken as the extract of the plant.
2. In each extract was doped with the infected blood samples.
3. Individually blood samples were doped into the distilled water.
4. One of the cuvette was washed with distilled water and filled with distilled water and kept in the reference compartment which acted as reference solution.
5. The wavelength was set at 800 nm, and the Absorbance was set at zero.
6. Blood doped plant extracts was kept in the sample compartment and analyzed for further studies.

For the comparative study normal blood was analysed first followed by dengue infected blood and viral blood samples. Thereafter the combination doped with blood was analysed spectroscopically. And again it was showing the peaks of different components of medicinal plants. The individual blood sample also gives the peaks i.e. of different components present in the blood samples.

The following spectra’s explains the detail information about the UV spectroscopy.
Graph 10.1 Normal blood

Graph 10.2: Dengue infected blood.
Graph 10.3: Viral infected blood.

The comparative study of these three blood samples is shown in the tables below.

<table>
<thead>
<tr>
<th>Sr. no</th>
<th>Blood sample</th>
<th>Lambda max (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal</td>
<td>417.0</td>
</tr>
<tr>
<td>2</td>
<td>Dengue infected</td>
<td>431.0</td>
</tr>
<tr>
<td>3</td>
<td>Viral infected</td>
<td>438.5</td>
</tr>
</tbody>
</table>

Table 10.1 Absorbance of blood samples
Graph: 10.1 Comparative studies of blood samples.

Above graph show the difference between the lambda max values of blood samples. Normal blood shows lower value of lambda max as it is pure blood and show less blue and red shifts. While dengue infected and viral infected blood shows higher lambda max because they contains impurities i.e. they contains viruses present in the dengue and viral disease. And therefore it show different peaks.

After this study the medicinal plant combinations in different ratios were doped blood samples for further analysis.

Graph 10.4: 1:2:2:3:3 plant ratio with dengue blood doping

The above spectra shows higher concentration peaks of the medicinal plants and the peak of dengue blood get vanished. That means the medicinal plant components destroys the blood or blood virus. Here in the combination
concentration of curcuma longa and papaya is higher and therefore it shows peaks of both medicinal plants with blue shift. And the dengue blood peak shifts to normal blood peak.

Graph 10.5: 2:2:1:2:3 Plant extract combination ratio doped with dengue blood
In the second combination also peak of dengue blood does not exists. This combination contains higher amount of curcuma longa and also Basil and Azardirachta indica. Therefore these plants highly reactive and show their peaks in maximum number.
Graph 10.6: 2:2:2:3:1 Plant extract combination ratio doped with dengue blood
The third combination contains less amount of curcuma longa and all the plants in higher in concentration. Therefore all the medicinal plants get active and the components in it show more peaks by which dengue blood peak get vanish.

<table>
<thead>
<tr>
<th>SR. NO</th>
<th>Medicinal plant in ratio with dengue blood doping</th>
<th>Lambda max (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1:2:2:3:3</td>
<td>419</td>
</tr>
<tr>
<td>2</td>
<td>2:2:1:2:3</td>
<td>416</td>
</tr>
<tr>
<td>3</td>
<td>2:2:2:3:1</td>
<td>412</td>
</tr>
</tbody>
</table>

Table 10.2 Absorbance of Plant extract combination ratio doped with dengue blood
Graph 10.2 Comparative study of lambda max value of Plant extract combination ratio doped with dengue blood.

From the above data all the combination ratio shows nearly equal lambda max values. But the last combination i.e. 2:2:2:3:1 which have large number of medicinal plants in ratio and therefore it get vanished the strong peak of dengue blood and show the blue shift. While the remaining two ratios show red shifts.

Graph 10.7 1:2:2:3:3 Plant extract combination ratio doped with viral blood
Graph 10.8: 2:2:1:2:3 Plant extract combination ratio doped with viral blood

Graph 10.9: 2:2:2:3:1 Plant extract combination ratio doped with viral blood

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<tr>
<td>2</td>
<td>2:2:1:2:3</td>
<td>401</td>
</tr>
<tr>
<td>3</td>
<td>2:2:2:3:1</td>
<td>409</td>
</tr>
</tbody>
</table>
Table 10.3 Absorbance of Plant extract combination ratio doped with viral blood

Graph 10.3 Comparative study of lambda max value of viral infected blood doped with medicinal plant ratio

From the above observation for viral infected blood doping combination the second ratio i.e. 2:2:1:2:3 gives a lower lambda max i.e. it shows blue shift. The concentration of bacteria in 2\textsuperscript{nd} ratio in viral blood doping and 3\textsuperscript{rd} ratio in dengue blood doping is get absorbed by the medicinal plants very high i.e. all the chemicals in present in the plants kills the bacteria and therefore it shows lower absorbance.