

## CHAPTER III

### RESULTS

In selection of ointment bases, the study was investigated by measuring the hexamidine release from different ointment bases. (Hydrophilic ointment, Hydrophilic petrolatum, Polyethylene glycol ointment and White ointment). The ointment base that gave the maximum amount of hexamidine release was the base of choice.

Figure 2. Showed the release of hexamidine from different ointment bases containing the same concentration (0.1 % W/W) at 37°C in 2 hours. It was found that the polyethylene glycol ointment gave the maximum release of hexamidine, the second was hydrophilic ointment, while hydrophilic petrolatum was the third, and white ointment became the fourth respectively.

Figure 3 - 8. Showed the release of hexamidine from polyethylene glycol ointment containing the same concentration (0.1 % W/W) and the same concentration of each cationic surfactants (Benzalkonium chloride 1:1000 solution, Cetrимide 1:1000 solution and Cetylpyridinium chloride 1:1000 solution) beginning from 1 %, 3 %, 5 %, 7 %, 10 % and finally 12 % respectively at 37°C. The results were pointed out that every ointment

preparation gave the release of hexamidine more than the one without cationic surfactant.

Figure 9. Showed the effect of various concentrations (1, 3, 5, 7 and 10 %) of benzalkonium chloride 1:1000 solution on the release of hexamidine from polyethylene glycol ointment. The curve showed that the amount of hexamidine increased as the concentration of the benzalkonium chloride solution increased.

Figure 10. Showed the effect of various concentrations (1, 3, 5, 7 and 10 %) of cetrimide 1:1000 solution on the release of hexamidine from polyethylene glycol ointment. The results also showed that the amount of hexamidine increased as the concentration of the cetrimide solution increased.

Figure 11. Showed the effect of various concentrations (1, 3, 5, 7 and 10 %) of cetylpyridinium chloride 1:1000 solution on the release of hexamidine from polyethylene glycol ointment. The results also showed that the amount of hexamidine increased as the concentration of the cetylpyridinium chloride solution increased.

In the part of cationic surfactants, the results can be indicated that they had effect on the release of hexamidine from polyethylene glycol ointment (Figure 3-8) actively, especially when the concentration of each cationic surfactants increased, the amount of hexamidine releasing increased too.

The amount of each cationic surfactants that could be added to the polyethylene glycol ointment containing 0.1 % W/W hexamine without loosing stability and viscosity was 10 %.

Finally the result showed that benzalkonium chloride 1:1000 solution was the best cationic surfactant for hexamine.

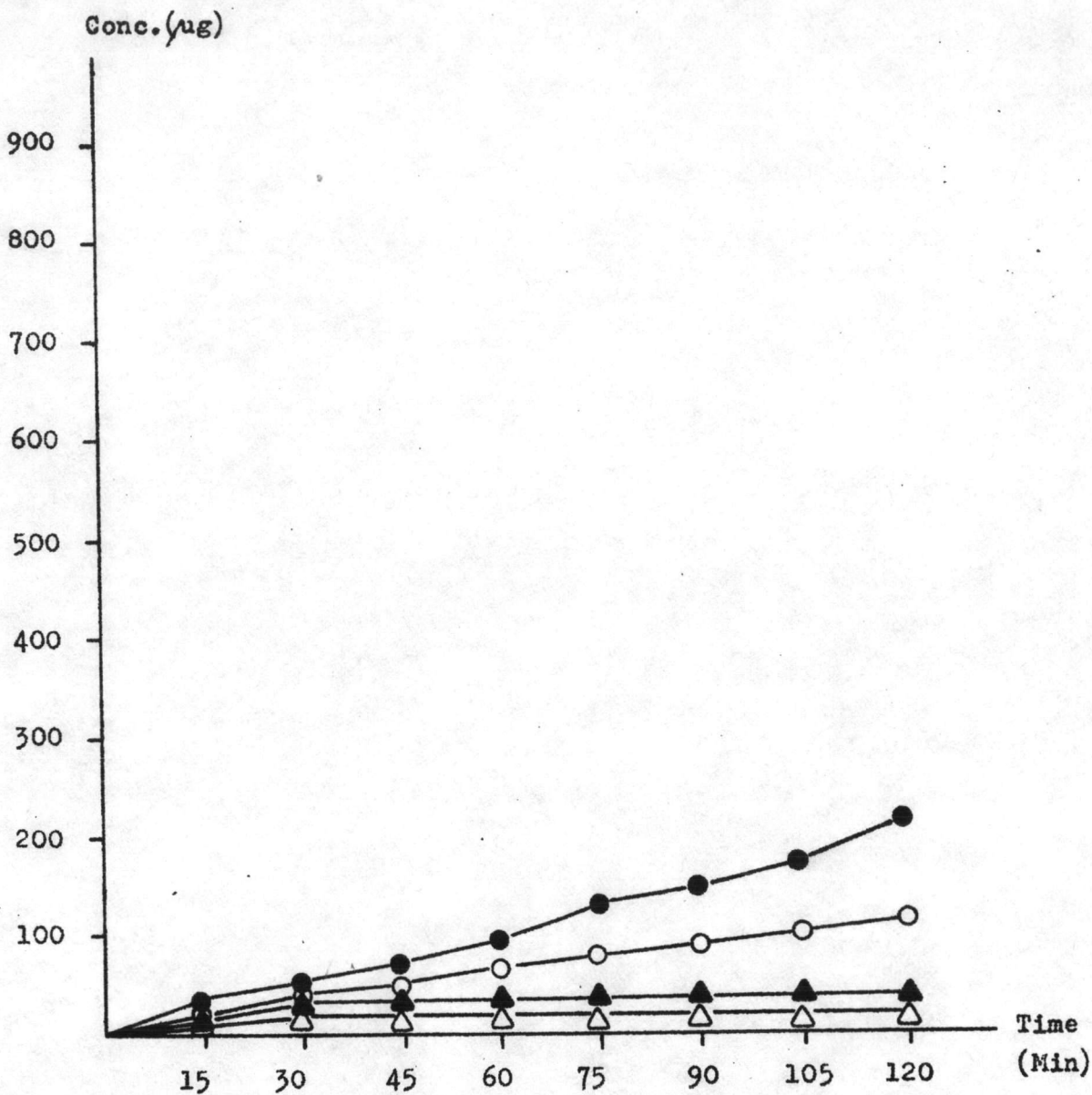
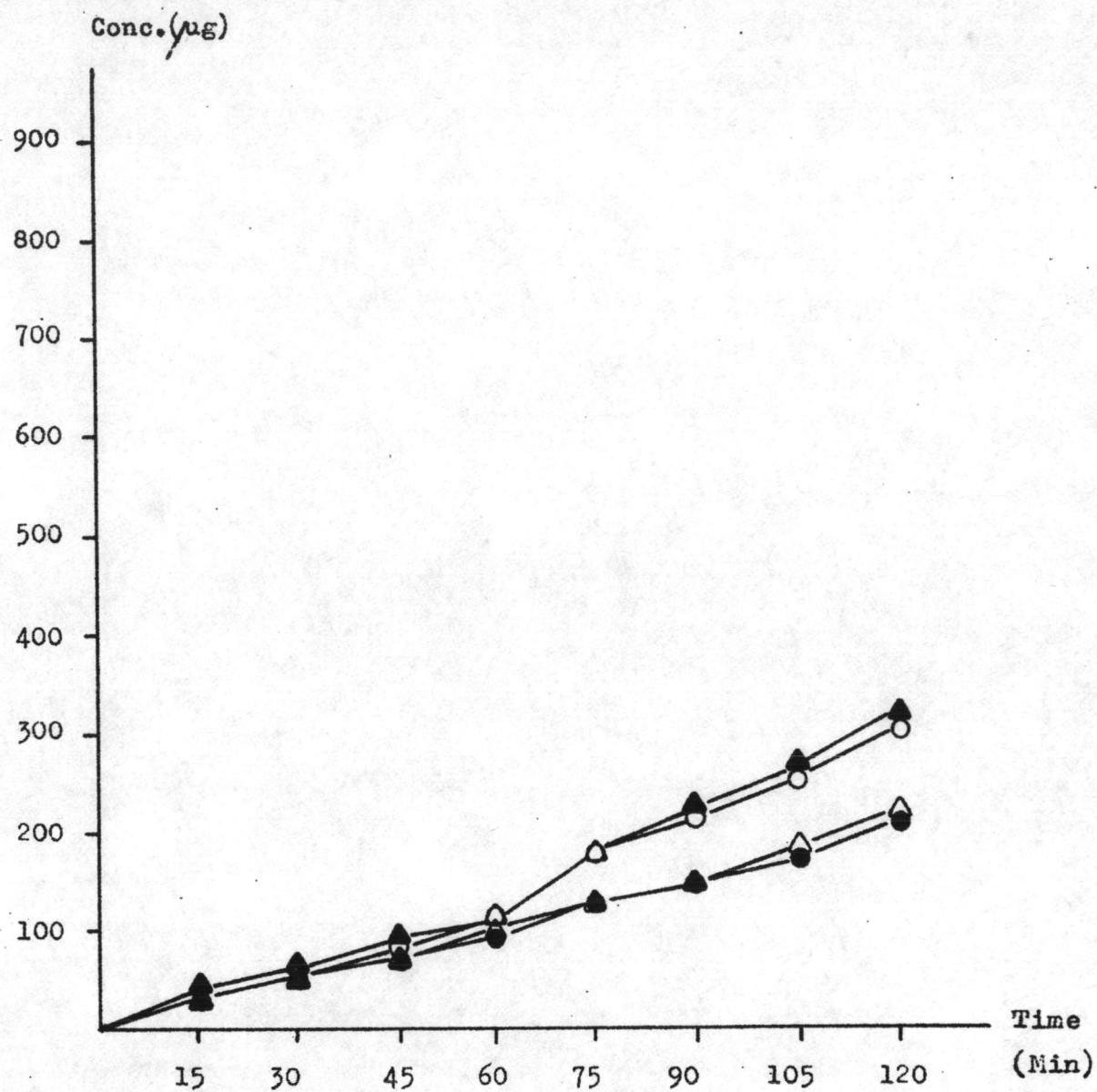


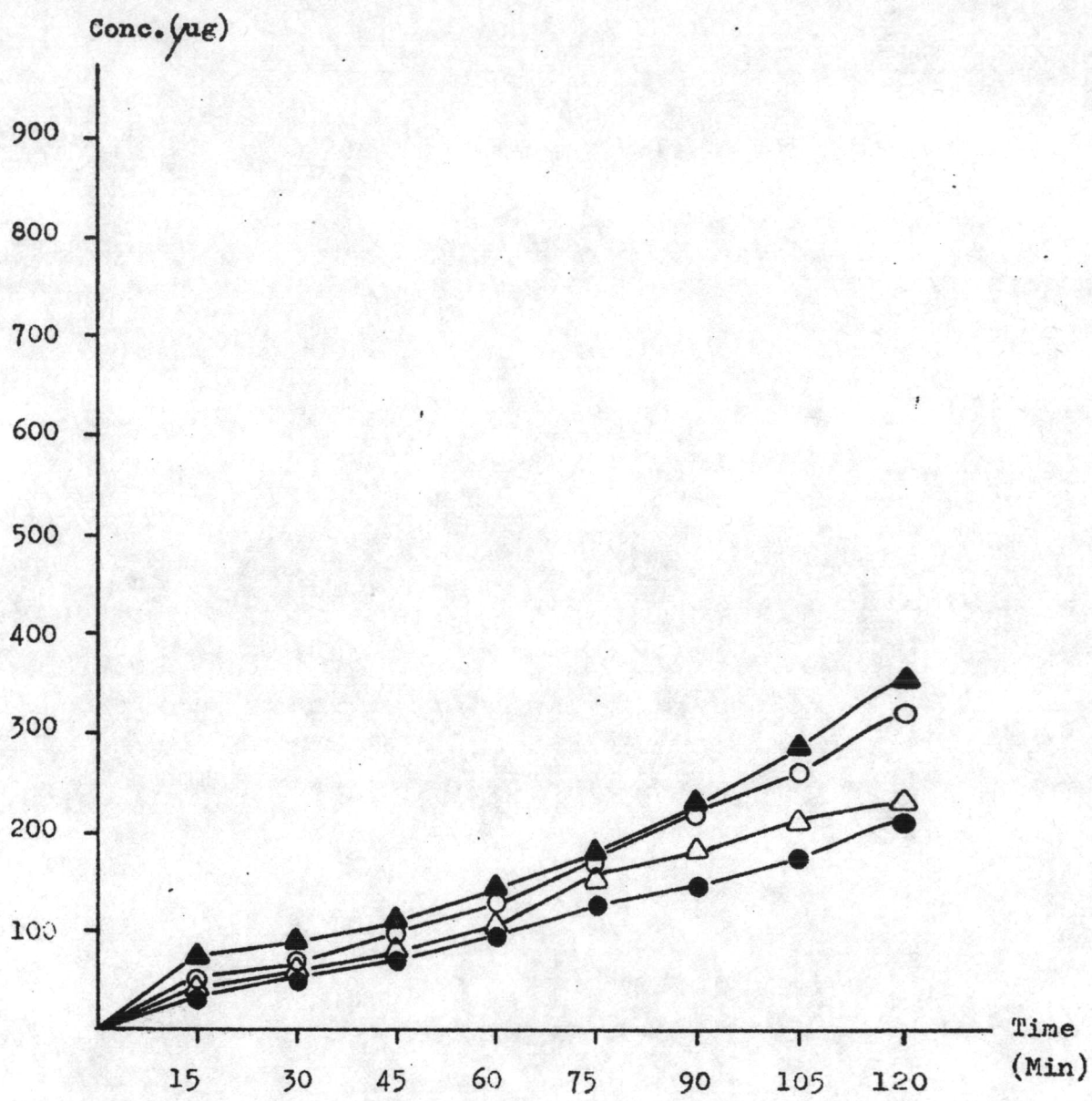
Figure 2 Concentration V.S. time curves of Hexamidine releasing from 0.1 % W/W of different ointment bases at 37°C.

Keys :    △ White Ointment,    ▲ Hydrophilic Petrolatum,  
                   ○ Hydrophilic Ointment,    ● Polyethylene Glycol Ointment.



**Figure 3** Concentration V.S.time curves of Hexamidine releasing from 0.1 % W/W PEG ointment with 1 % of various cationic surfactants at 37°C.

**Keys** : ● Control, △ Cetylpyridinium chloride, ○ Cetrimide, ▲ Benzalkonium chloride.



**Figure 4** Concentration V.S. time curves of Hexamidine releasing from 0.1 % W/W PEG ointment with 3 % of various cationic surfactants at 37°C

**Keys :** ● Control, △ Cetylpyridinium chloride  
○ Cetrimide, ▲ Benzalkonium chloride

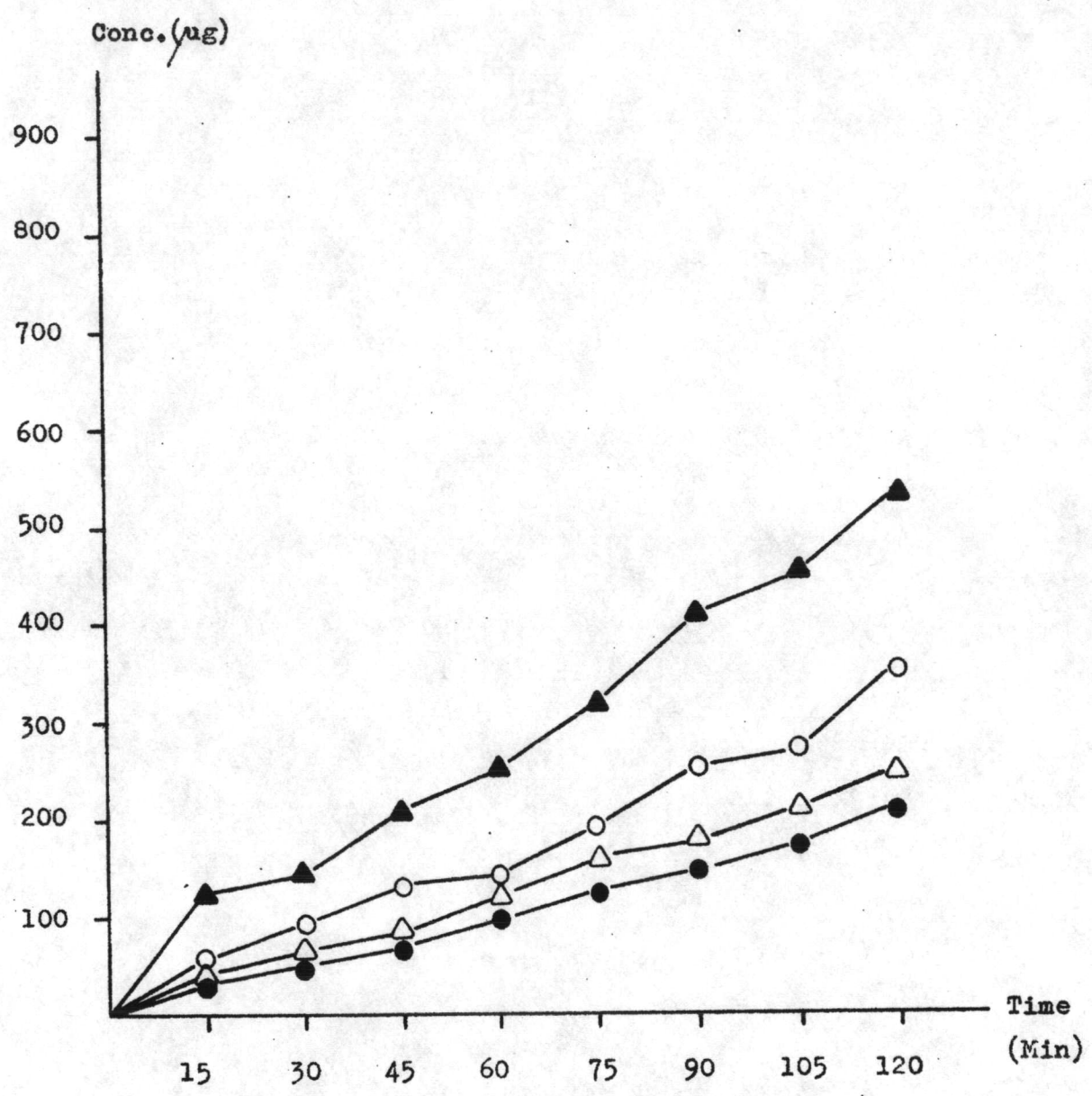
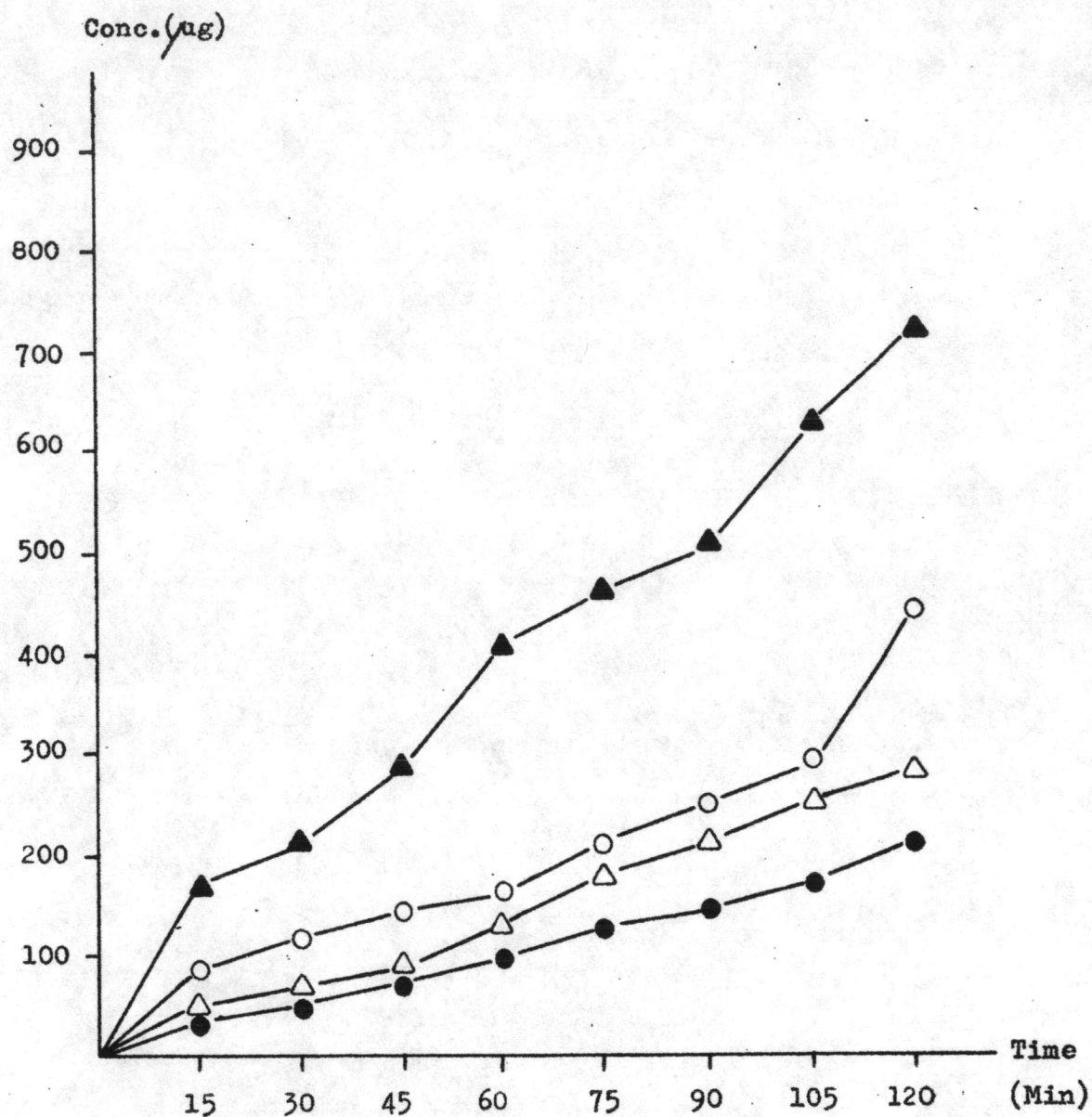


Figure 5 Concentration V.S. time curves of Hexamidine releasing from 0.1 % W/W PEG ointment with 5 % of various cationic surfactants at 37°C

Keys : ● Control, △ Cetylpyridinium chloride  
○ Cetrimide, ▲ Benzalkonium chloride.



**Figure 6** Concentration V.S. time curves of Hexamidine releasing from 0.1 % W/W PEG ointment with 7 % of various cationic surfactants at 37°C

**Keys** : ● Control, △ Cetylpyridinium chloride,  
○ Cetrimide, ▲ Benzalkonium chloride.



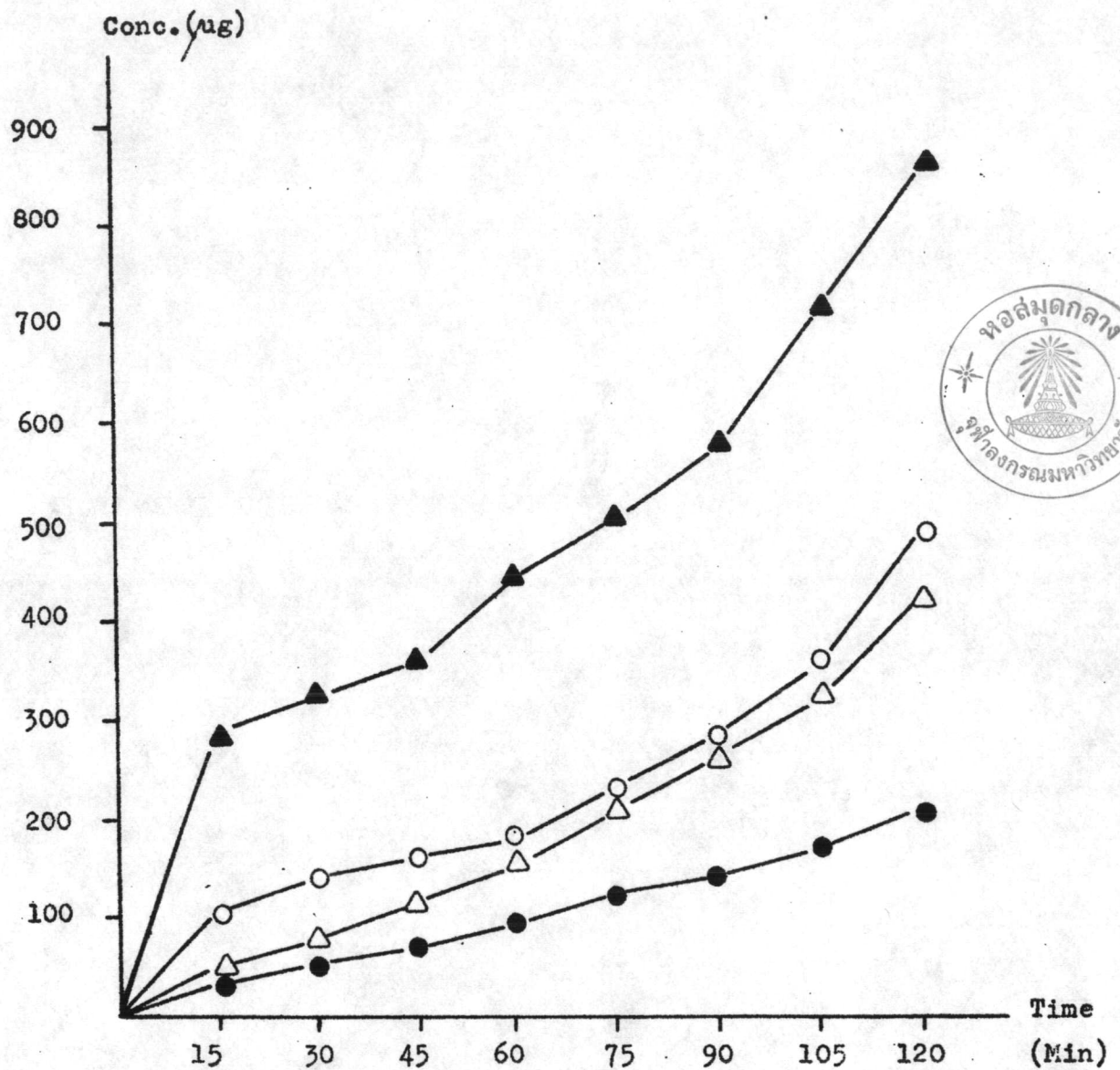


Figure 7 Concentration V.S. time curves of Hexamidine releasing from 0.1 % W/W PEG ointment with 10 % of various cationic surfactants at 37°C

Keys : ● Control, △ Cetylpyridinium chloride  
○ Cetrimide, ▲ Benzalkonium chloride.

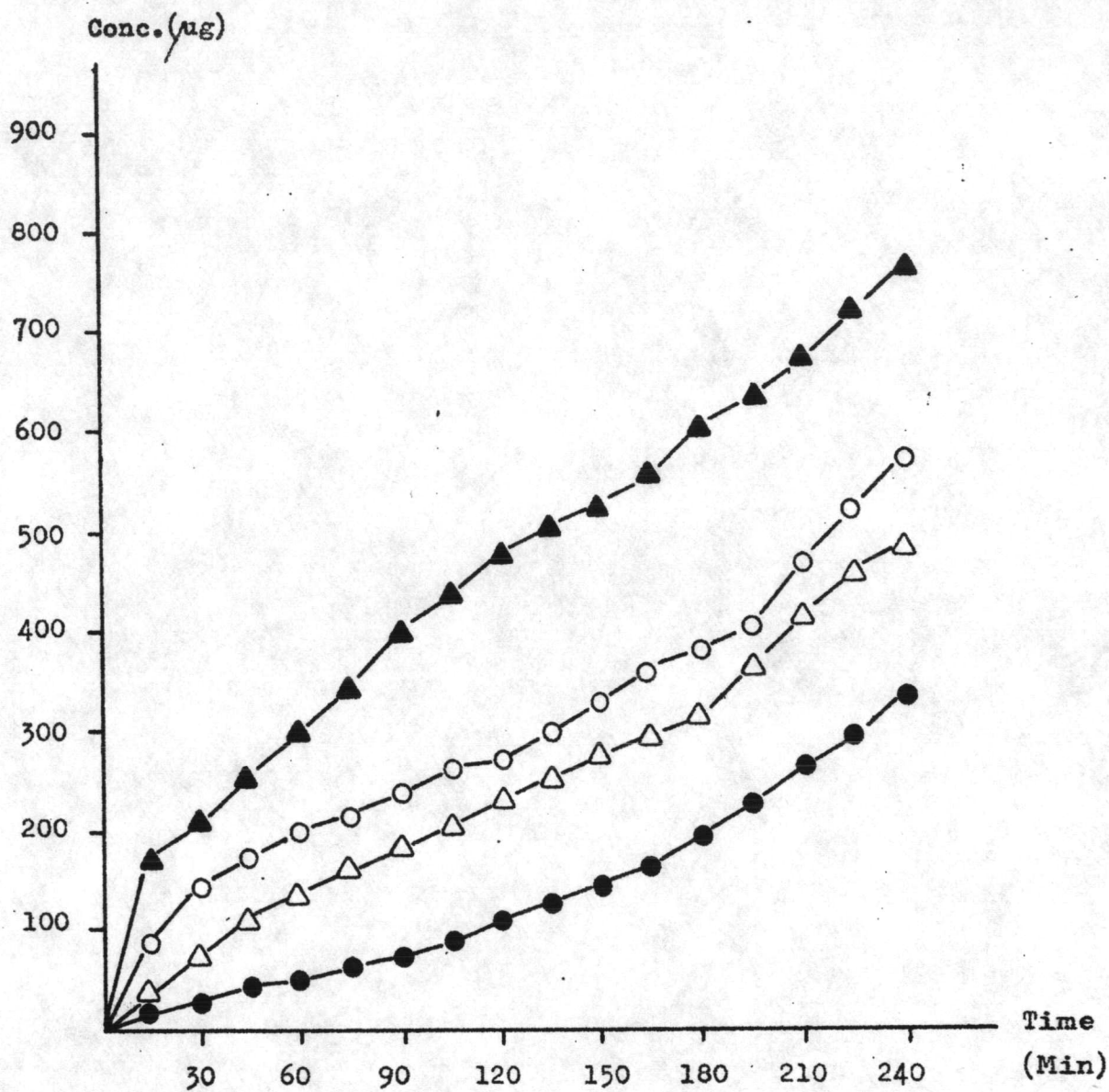


Figure 8 Concentration V.S. time curves of Hexamidine releasing from 0.1 % W/W PEG ointment with 12 % of various cationic surfactants at 37°C

Keys : ● Control, △ Cetylpyridinium chloride,  
○ Cetrimide, ▲ Benzalkonium chloride.

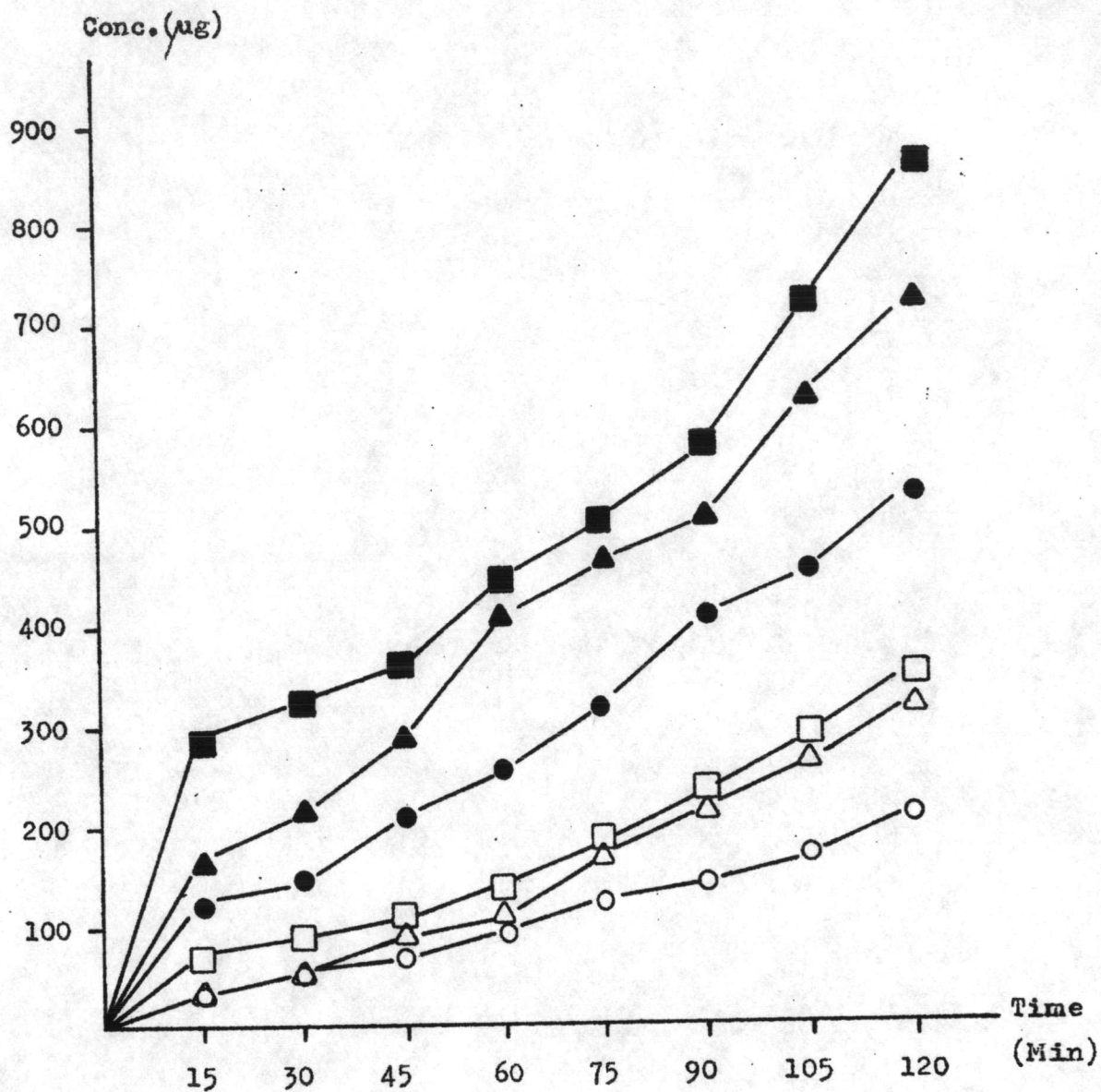
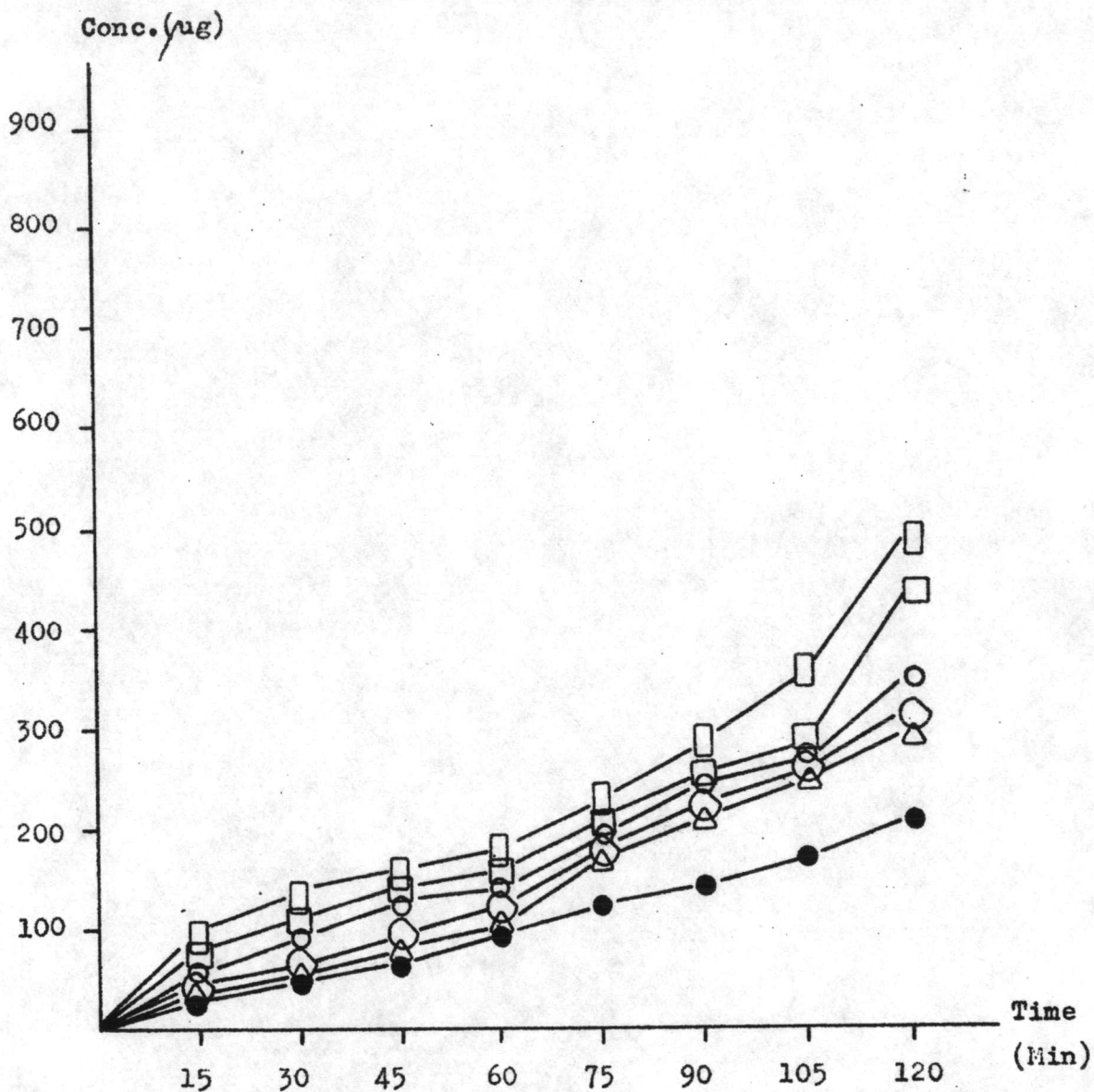


Figure 9 Concentration V.S. time curves of Hexamidine releasing from 0.1 % W/W PEG ointment with various concentration of Benzalkonium chloride 1 : 1000 solution at 37°C

Keys : ○ 0 %, △ 1 %, □ 3 %, ● 5 %, ▲ 7 %, ■ 10 %,



**Figure 10** Concentration V.S. time curves of Hexamidine releasing from 0.1 % W/W PEG ointment with various concentrations of Cetrimide 1:1000 solution at 37°C

**Keys** : ● 0 %, △ 1 %, ○ 3 %, ○ 5 %, □ 7 %, □ 10 %.

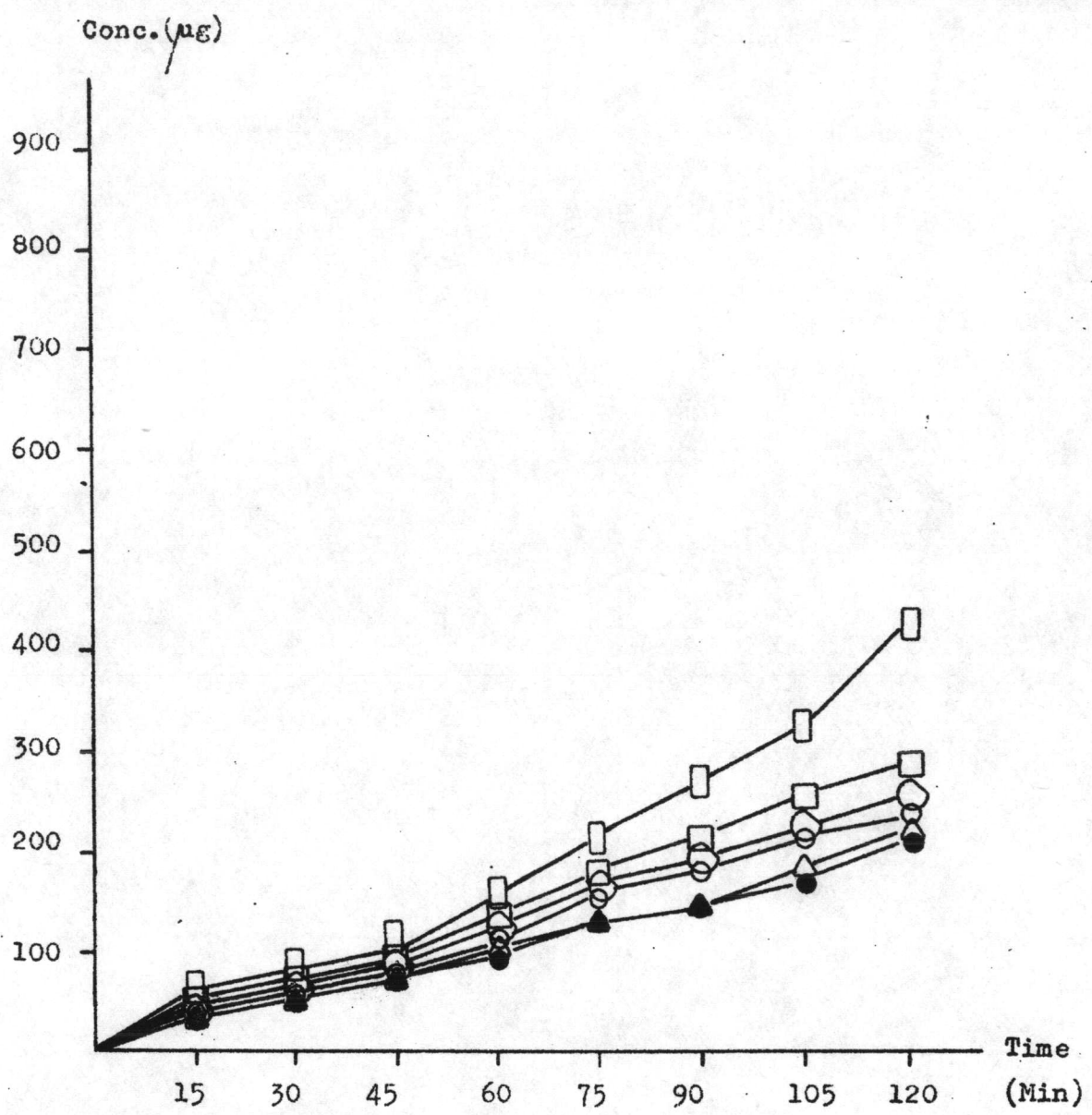


Figure 11 Concentration V.S. time curves of Hexamidine releasing from 0.1 % W/W PEG ointment with various concentrations of Cetylpyridinium chloride 1:1000 solution at 37°C

Keys : ● 0 %, △ 1 %, ○ 3 %, ○ 5 %, □ 7 %, □ 10 %.