Same series of dilutions were immediately afterwards inoculated intracerebrally in groups of infant mice, 0·02 ml. per mouse.

Sensitivity to viruses of various cell lines and infant mice was compared by calculating the minimum concentration of virus which produced infection in 50% of the inoculated cell cultures or mice. The end-points of viral infectivity were calculated as log 10 $LD_{50}$/0·1 ml. for mice and log 10 $TCD_{50}$/0·1 ml. for VERO cells. Since all of the viruses tested did not produce cytopathic effect in mosquito cell cultures, 50% end-points of infectivity ($TCID_{50}$) for ATC-10 and ATC-15 cells were calculated on the basis of detection of infectivity of the tissue culture fluids harvested from individual mosquito cell cultures on the seventh post-inoculation day. Infectivity of these tissue culture fluids was tested in VERO cultures, except in the case of dengue 2 virus where viral infectivity for both VERO cells and mosquito cells was detected by intracerebral inoculation in infant mice. In case of ATC-15 cultures infected with Japanese encephalitis, West Nile and dengue 2 viruses, 50% cytopathic end-points ($TCD_{50}$) were also calculated. These end-points corresponded exactly with the $TCID_{50}$ end-points.

The figures in Table I give the results of these calculations expressed as reciprocals of the negative log 10 $LD_{50}$, $TCD_{50}$ and $TCID_{50}$ titres of various viruses in mice and different cell lines.

TABLE I

*Comparative titres* of selected arboviruses*

| Virus | Infant mice | Cell lines | | |
|---|---|---|---|---|
| | | VERO | ATC-15 *Aedes albopictus* | ATC-10 *Aedes ægypti* |
| Chikungunya | 8·2* | 8·17 | 8·25 | |
| | | 8·3 | 8·66 | 6·6 |
| West Nile .. | 8·6 | 9·0 | 9·0† | 7·0 |
| Japanese encephalitis | 8·4 | 9·0 | 9·5† | Not susceptible |
| Dengue 2 .. | 6·9 | 6·5 | 8·5† | ” |
| Batai .. | 7·2 | 6·83 | 6·0 | ” |
| Chandipura .. | 9·5 | 9·3 | 9·0 | 7·66 |

* Expressed as the $LD_{50}$, $TCID_{50}$ or $TCD_{50}$ reciprocal of the negative Log 10. † Cytopathic end-points ($TCD_{50}$) of these viruses corresponded to their infective end-points ($TCID_{50}$) given in Table I.

These results show that ATC-10 cell line which has previously been shown to support the growth of only selected viruses, is much less sensitive to infection with arboviruses than ATC-15 cell line.

ATC-15 cell line is equally or slightly more sensitive to infection with Chikungunya, West Nile and Japanese encephalitis viruses as compared to infant mice and VERO cells. It is slightly less sensitive than mice and VERO cells to infection with Batai and Chandipura viruses. However, it is 100 times more sensitive than VERO cells and 40 times more sensitive than infant mice to infection with dengue 2 virus strain used in this study.

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Virus Research Centre,* Poona, India, December 26, 1968.

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## STUDIES IN SCHIFF'S BASES

THE reaction of aldehydes with amines to give schiff's bases is well known. A number of workers have carried out these condensations with a view to synthesise new schiff's bases.[1-4] In recent years, the metal complexes of schiff's bases have also attracted the attention of many workers.[5] In this communication a few hitherto unknown schiff's bases, which were prepared to investigate the preparation, properties and structure of their metallic complexes, are being reported.

In the present work, schiff's bases have been prepared by the condensation of *m*-aminophenol with various aromatic aldehydes. The following is a typical example.

0·01 mole of *m*-aminophenol and 0·01 mole of veratric aldehyde were mixed together in 25 ml. pure ethanol (aldehyde free) and refluxed in a water-bath for about two hours. The reaction mixture was poured into crushed ice. The compound obtained was filtered and recrystallized from rectified spirit or alcohol-water mixture. The condensations with other aldehydes were also carried out in a similar way and the results are given in Table I.

TABLE I
*Preparation of various schiff's bases by condensation of m-aminophenol with different aldehydes*

| | Name of the compound | Yield (%) | Refluxing time (hr.) | Colour of product | Melting point (°C.) | % of Nitrogen | |
|---|---|---|---|---|---|---|---|
| | | | | | | Found | Calculated |
| (a) | 3, 4-methoxy benzylidine-*m*-hydroxy aniline | 55·6 | 2 | Buff | 73– 74 | 5·60 | 5·46 |
| (b) | 3-methoxy-4-hydroxy benzylidene-*m*-hydroxy aniline | 61·3 | 1 | Brownish-yellow | 131–132 | 5·54 | 5·64 |
| (c) | Salicylidene-*m*-hydroxy aniline | 82·2 | 1½ | Orange-yellow | 122–123 | 7·0 | 6·6 |
| (d) | Anisylidene-*m*-hydroxy aniline | 70·5 | 1½ | Grey | 95– 96 | 5·28 | 5·27 |
| (e) | *p*-methylbenzylidine-*m*-hydroxy aniline | 52·1 | 1½ | Light brown | 197 | 6·34 | 6·56 |
| (f) | *p*-nitrobenzylidene-*m*-hydroxy aniline | 49·6 | 1½ | Yellowish-brown | 199–201 | 6·59 | 6·00 |
| (g) | 2-hydroxy naphthylidene-*m*-hydroxy aniline | 30·4 | 1½ | Deep yellow | 228 | 7·80 | 7·0 |
| (h) | Benzylidene-*m*-hydroxy aniline | 50·8 | 2 | Brownish | 101–102 | 9·82 | 10·00 |
| (i) | *p*-dimethylamino benzylidene-*m*-hydroxy aniline | 45·4 | 2 | Buff | 196–198 | .. | .. |

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## PLAGIOCLASE FELSPARS OF THE JAMKHANDI GRANITES AND THEIR GENETIC SIGNIFICANCE

PLAGIOCLASE felspars from the granites exposed around Jamkhandi (Lat. 16° 30′; Long. 75° 15′) were selected for detailed investigation of their optical properties. About 60 grains in 14 thin sections representing different granitic outcrops of the area were studied on Fedorov's 4-axes universal stage (P. R. J. Naidu, 1958) for the determination of anorthite content and twin laws according to the methods of Reinhard. Such plagioclases constitute about 37% of the granite and have developed good polysynthetic twinning. They are optically negative with $-2V = 83°\text{-}88°$ and $Z \wedge c = 83°\text{-}85°$. Their anorthite content ranges between 20% and 30% and the composition face runs parallel to 010. Thus the plagioclase felspars correspond to oligoclase. The transferred poles of the composition face when superposed on tafel 2 of Reinhard tend to cluster between 20% and 30% anorthite content on 010 curve, and show very little dispersion.

Majority of the plagioclase felspars have been twinned after the albite law while a few are after the complex albite ala law. In addition to these there are also the combined-albite-pericline twins. The other usual twins like the manebach, acline, manebach-acline, and baveno are practically absent. Both the simple and complex laws were checked by Nikitin's and Berek's constructions. The frequency percentages of different types of twins supplemented by a graph (Fig. 1) is tabulated below. The data show that the albite twins are the most abundant.

TABLE I

| Twin law | | Per cent |
|---|---|---|
| Albite | .. | 63 |
| Complex albite ala | .. | 20 |
| Combined albite-pericline | .. | 17 |
| | | 100 |

Statistical studies of each type of twinning bring out that majority of the albite twins are present at 25% An while they are least recorded