**Vicia cretica**: a powerful lectin for T- and Th- but not Tk- or other polyagglutinable erythrocytes

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**Summary**

Extracts of the seeds of *Vicia cretica* (NO *Leguminosae*) strongly agglutinate T- and Th- but not Tk- or other polyagglutinable red cells. The *V. cretica* lectin is therefore a very useful laboratory reagent in the elucidation of erythrocyte polyagglutination due to T-like erythrocyte cryptantigens.

For many years the peanut (*Arachis hypogaea*) lectin has been of fundamental importance in the classification of red cell polyagglutinability. It strongly agglutinates T-, Th-, and Tk-polyagglutinable erythrocytes, which are distinguished from one another (Table) by tests with the soya bean (*Glycine soja*) and *Bandeiraea simplicifolia* (BS II) lectins.

**Material and methods**

*Vicia cretica* seeds were obtained from the Seed Bank of the Royal Botanic Gardens, Kew. Extracts were prepared and tested as described by Bird. Red cells were obtained from the comprehensive panel held in our laboratory. Agglutination tests were carried out by both tile and tube techniques.

Normal group O erythrocytes were made Tk-polyagglutinatable by the methods described by Doinel et al. with (1) a selected *Bacteroides fragilis* culture supernatant, and (2) a purified endo-β-galactosidase from *Escherichia freundii*, prepared by Dr MN Fukuda of Seattle.

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**Results**

*V. cretica* seed extract strongly and avidly agglutinates T- and Th-red cells, but not Tk- or those of other known forms of polyagglutinability. Protease-treated cells are not agglutinated. Its reaction on T-transformed red cells is as powerful as that of the peanut lectin. Its avidity for Th-erythrocytes was consistently greater than that of the peanut lectin. It failed to agglutinate Tk-polyagglutinatable cells (without concomitant T-transformation) even after the cells had been treated with papain, which enhances Tk. The reactions obtained with *V. cretica* seed extract and with other lectins relevant to the classification of T-like erythrocyte receptors are given in the Table.

**Discussion**

Other lectins known to agglutinate T-transformed cells include *Tephrosia hookeriana*, *Thermopsis caroliniana*, and *Thermopsis montana*. These lectins are, however, inferior to the peanut lectin, whereas the *V. cretica* lectin is as powerful. *V. cretica* is indigenous to Crete and eastern Greece; its seeds are

### Table: Interaction of T and T-like erythrocytes with a select panel of lectins

<table>
<thead>
<tr>
<th>Lectins</th>
<th>Red cells</th>
<th>Tk (B. fragilis)</th>
<th>Tk (E. freundii)</th>
<th>Th</th>
<th>Protease-treated</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Arachis hypogaea</em></td>
<td>+++</td>
<td>+++</td>
<td>-</td>
<td>+++</td>
<td>-</td>
</tr>
<tr>
<td><em>Glycine soja</em></td>
<td>+++</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>+ + +</td>
</tr>
<tr>
<td>BS II*</td>
<td>-</td>
<td>+++</td>
<td>++ +</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><em>Vicia cretica</em></td>
<td>+++</td>
<td>-</td>
<td>-</td>
<td>+++</td>
<td>-</td>
</tr>
</tbody>
</table>

* A second isolectin from *Bandeiraea simplicifolia.*
not as easy to obtain as peanuts. The *V. cretica* lectin is therefore unlikely to replace the peanut lectin in routine laboratory investigation of erythrocyte polyagglutinability, but we have no doubt that the *V. cretica* lectin will fulfil a very useful role in specialised laboratories in the investigation of red cell polyagglutinability.

We are indebted to Mr TCF Roy for expert help, to Mr G Inglis and Dr AAB Mitchell for *Bacteroides fragilis* culture supernatants, and to Dr MN Fukuda for the endo-β-galactosidase from *Escherichia freundii*.

References


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