```
select_mem  THM

⊢  ∀L:T*, i:ℕ||L||. mem_f(T;L[i];L)
| by (Analyze 0) THEN (Analyze 0) THEN (ListInd 2) THEN (Reduce 0)
|
1. T : Type
2. T*
3. u : T
4. v : T*
5. ∀i:ℕ||v||. mem_f(T;v[i];v)
6. i : ℕ(||v||+1)
⊢  u = (u.v)[i] ∨ mem_f(T;(u.v)[i];v)
| by (Unfold ‘select‘ 0 THEN RecUnfold ‘nth_tl‘ 0)
|    THEN
|    SplitOnConclITE
|    THEN
|    (Reduce 0)
|
|\
| 7. i≤0
| ⊢  u = u ∨ mem_f(T;u;v)  by Sel 1 (Analyze 0)
|
.\
. 7. 0<i
. ⊢  u = hd(nth_tl(i-1;v)) ∨ mem_f(T;hd(nth_tl(i-1;v));v)
.   by (Fold ‘select‘ 0 THEN Sel 2 (Analyze 0)) THEN (BackThru 5)
END
```