Title: PRODUCTION OF 5-METHYL-N-(METHYL ARYL)-2-PYRROLIDINE, 5-METHYL-N-(METHYL CYCLOALKYL)-2-PYRROLIDONE AND 5-METHYL-N-ALKYL-2-PYRROLIDONE BY REDUCTIVE AMINATION OF LEUVLINIC ACID ESTERS WITH CYANO COMPOUNDS

Abstract: This invention relates to a process for producing 5-methyl-1-R-2-pyrrolidone or 5-methyl-2-pyrrolidone, wherein R is a hydrocarbyl or substituted hydrocarbyl, by reductive amination of levulinic acid utilizing a metal catalyst, which may be optionally supported.
## INTERNATIONAL SEARCH REPORT

### A. CLASSIFICATION OF SUBJECT MATTER
- **IPC(7)**: C07D 207/04
- **US CL**: 548/552

According to the International Patent Classification (IPC) or to both national classification and IPC

### B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
- U.S.: 548/552

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
- EAST; STN CAS ON LINE

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
</table>

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
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- **E** earlier application or patent published on or after the international filing date
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**&** document member of the same patent family

**Date of the actual completion of the international search:**

11 July 2005 (11.07.2005)

**Authorized officer:**
- Kamal Saeed, Ph.D.

**Date of mailing of the international search report:**

18 JUL 2005

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