

**THIS OPINION WAS NOT WRITTEN FOR PUBLICATION**

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 14

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* NARIYASU MANO,  
YOSHIYA ODA,  
TOSHINOBU MIWA,  
NAOKI ASAKAWA,  
YUTAKA YOSHIDA,  
and TADASHI SATO

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Appeal No.95-4448  
Application 08/070,434<sup>1</sup>

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ON BRIEF

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Before KIMLIN, WEIFFENBACH and WARREN, *Administrative Patent Judges*.

WEIFFENBACH, *Administrative Patent Judge*.

**DECISION ON APPEAL**

This is a decision on appeal under 35 U.S.C. § 134 from the decision of the examiner refusing to

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<sup>1</sup> Application for patent filed June 2, 1993.

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allow claims 1-5, the only claims remaining in the application. We affirm-in-part.

### **The Claimed Subject Matter**

The claimed subject matter is directed to an optical isomer separating agent comprising conalbumin bonded to a support. On page 2 of the brief, appellants state that all of the claims “stand or fall together.” Accordingly, we will treat the claims as standing or falling with claims 1 and 3 which read as follows:

1. An optical isomer separating agent characterized by being composed of a stationary phase comprising a support and conalbumin bonded thereto.
3. An optical isomer separating agent as set forth in Claim 1, wherein said conalbumin is a chemically modified conalbumin.

### **The Prior Art References**

The following prior art references are relied upon by the examiner in support of the rejections of the claims for obviousness:

Hsu	4,980,065	Dec. 25, 1990
Miwa et al. (Miwa)	5,030,354	Jul. 9, 1991

*Mikes' Laboratory Handbook Of Chromatographic and Allied Methods* (Mikes),  
John Wiley and Sons, pages 402-203 (1979).

### **The Rejections**

Claims 1-3 and 5 stand rejected under 35 U.S.C. § 103 as being unpatentable over Miwa in view of Hsu.

Claims 3 and 4 stand rejected under 35 U.S.C. § 103 as being unpatentable over Miwa in view of Hsu and Mikes.

### **Opinion**

We have carefully considered the entire record in light of the respective positions advanced by appellants and by the examiner. In doing so, we will affirm the examiner's rejection of claims 1-3 and 5 over Miwa and Hsu for obviousness and reverse the rejection of claims 3 and 4 for obviousness over Miwa, Hsu and Mikes.

#### REJECTION OF CLAIMS 1-3 AND 5

The examiner rejected claims 1-3 and 5 under 35 U.S.C. § 103 as being unpatentable over Miwa in view of Hsu. We will affirm this rejection. As pointed out by the examiner, Miwa discloses serum albumin as a separating agent which is bonded to a silica gel or agarose support (col. 1, lines 57-60). Hsu discloses that conalbumin and bovine serum albumin are known chiral resolving agents. From these teachings we conclude that a person having ordinary skill in the art would have been motivated to substitute conalbumin for bovine serum albumin with the reasonable expectation that the conalbumin on a silica gel or agarose support would be an optical isomer separating agent as claimed.

The thrust of appellants' arguments is that the combination of Miwa and Hsu is improper because

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Hsu is directed to an aqueous two phase system for separation and purification of biochemicals and optical isomers while Miwa is directed to forming a solid phase system for separating optical isomers. We do not find this argument persuasive because Hsu discloses that conalbumin and bovine serum albumin have chiral resolving properties. A chemical compound and its properties are inseparable. *In re Papesch*, 315 F.2d 381, 391, 137 USPQ 43, 51 (CCPA 1963). Therefore, a person having ordinary skill in the art would have a reasonable expectation that conalbumin, like bovine serum albumin, if bonded to a silica gel or agarose support will resolve optical isomers. Accordingly, we conclude that the examiner has made out a *prima facie* case of obviousness over the combined teachings of Miwa and Hsu, and that appellants have not presented sufficient argument or offered any objective evidence to rebut the *prima facie* case.

#### REJECTION OF CLAIMS 3 AND 4

The examiner rejected claims 3 and 4 under 35 U.S.C. § 103 as being unpatentable over Miwa in view of Hsu and Mikes. We will reverse this rejection because the examiner has not established a *prima facie* showing that a chemically modified conalbumin would function as a separating agent. The examiner's reliance on Mikes is insufficient. While Mikes discloses that glutaraldehyde will cross-link its aldehyde groups with a free amido group present in polyacrylamide and that certain polyacetals can bind proteins through amino groups, claim 4 requires the chemically modified conalbumin to be linked with glutaraldehyde. None of the references relied upon by the examiner shows a chemically modified

conalbumin, let alone a chemically modified conalbumin which functions as a chiral resolving agent. Moreover, the examiner has not explained why a person having ordinary

skill in the art would have been motivated by the teachings of the prior art to chemically modify conalbumin. In addition, the examiner is relying on the prior art teachings of Miwa to equate conalbumin and bovine serum albumin as equivalent chiral resolving agents on silica gel or agarose carriers. Since neither of these carriers have been shown by the examiner to have free amido groups, it would appear that it would be impossible for glutaraldehyde to function as a cross-linking agent as taught by Mikes to bond a chemically modified conalbumin to the carriers as suggested by the examiner. For these reasons, the examiner's rejection is reversed.

#### **Other Issues**

In the event of further prosecution of this application, the examiner should consider the following issues under 35 U.S.C. § 112, second paragraph: whether the conalbumin as defined in claim 3 has antecedent support in claim 1 and whether the chemically modified conalbumin has been properly defined in claim 4.

1. On pages 2 and 3 of the specification and in claim 5, appellants define the optical isomer separating agent as being "conalbumin or chemically modified conalbumin." On page 4 of the specification,

appellants define “chemically modified conalbumin” in the present invention as meaning a “conalbumin which is partially chemically converted by cross-linkage with glutaraldehyde, conversion into diol, acylation or modification with glutaraldehyde followed by reduction.” Appellants do not appear to consider conalbumin as being generic and including chemically modified conalbumin, but a different compound prepared from conalbumin. However, claim 3 states “wherein

said conalbumin [recited in claim 1] is a chemically modified conalbumin.” This would imply that the chemically modified conalbumin is a specie of conalbumin which appellants’ disclosure would appear to indicate otherwise.

2. Claim 4 specifies that “the chemically modified conalbumin is cross-linked with glutaraldehyde, reduced and cross-linked with glutaraldehyde, converted into a diol, or acetylated.” This recitation is inconsistent with the specification which states that conalbumin, and not the chemically modified conalbumin, is modified by cross-linking with glutaraldehyde, converted into a diol, or acetylated. In addition, the specification states that conalbumin is modified with glutaraldehyde followed by reduction as opposed to the apparent claimed steps of reduction followed by cross-linking.

### **Conclusion**

For the reasons given above, the rejection of claims 1-3 and 5 under 35 U.S.C. § 103 as being unpatentable over Miwa and Hsu is affirmed while the rejection of claims 3 and 4 under 35 U.S.C. § 103

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Miwa, Hsu and Mikes is reversed. Accordingly, the decision of the examiner is affirmed-in-part.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR 1.136(a).

**AFFIRMED-IN-PART**

EDWARD C. KIMLIN	)	
Administrative Patent Judge	)	
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	)	
CAMERON WEIFFENBACH	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
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CHARLES F. WARREN	)	
Administrative Patent Judge	)	

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