IMMUNOMODULATION THROUGH CASTOR OIL PACKS

Harvey Grady

ABSTRACT

Castor oil has been used topically for various therapeutic purposes for thousands of years. Current research has identified castor oil as an anti-toxin and as having impact on the lymphatic system enhancing immunologic function. This double blind study examines lymphocyte values of 36 healthy subjects before and after topical castor oil application. Follow-up study on seriously ill subjects is needed.

ORIGINAL RESEARCH

INTRODUCTION

Since ancient times, the cold-drawn oil from the castor bean plant (*ricinus communis*) has been used therapeutically by cultures located in the tropical and temperate lands where it grows. Castor bean seeds, believed to be 4,000 years old, have been found in Egyptian tombs. (1) Historical records reveal medicinal use of castor oil in Egypt, India, China, Persia, Africa, Greece, Rome, Southern Europe and the Americas. The ancient Greeks knew of it as KiKi and the Romans as Palma Christi (hand of Christ). In Sanskrit it is known as Eranda and Vatari, and in Hebrew as Qiqayon. (2) Physicians in Europe and England during the 17th Century used it orally as well as topically. (3) Frazer prescribed castor oil for intestinal and biliary disorders in 1762. (4) Pharmaceutical and medical reference works commonly referred to castor oil in the 18th Century. (5,6)

Unlike oral use, which has been mainly for the treatment of bowel problems, the topical use of castor oil has varied, including treatment of skin lesions and hemorrhoids by the Aztecs (7), epilepsy by the Persians (8), reduction of tumors by the Greek, Dioscorides (9), eye irritation by the Egyptians (10), and induction of childbirth and expulsion of the placenta by the Chinese (11). Aside from its utilization in the medicine of other cultures and in Western folk medicine, current medical uses for castor oil include treatment of gastrointestinal disorders (12), skin disorders such as psoriasis (13), eye problems (14), and immunological disorders. (15)

Experimental research has identified castor oil as an anti-toxin (16,17) and as having an impact on the lymphatic delivery system when used as a surfactant vehicle for immunosuppressive and anti-tumor drugs. (18,19) In clinical use, immunological enhancement has been observed through topical administration of castor oil in a pack composed of three layers of wool flannel cloth saturated with oil, where the pack is situated on the right upper quadrant of the abdomen. (20) This type of application has been termed "castor oil pack." (See Appendix A: Instructions for Castor Oil Pack.) However, experimental evidence of this effect has been lacking.

STUDY DESIGN

A double-blind study was conducted with 36 healthy volunteer subjects, consisting of 30 females and 6 males who were recruited through newspapers and other means. "Healthy" meant that the volunteers did not express symptoms of any diagnosed illness and regarded themselves as healthy. Volunteers exhibiting symptoms associated with illness were screened out. A questionnaire and

95 Spotted Fawn Court
Sedona, AZ 86351-7288
520-284-3284

interview were administered regarding their health claims and habits involving nicotine, alcohol, and caffeine, which might affect the study, then subjects were randomly assigned to experimental or control groups. The experimental group received castor oil packs, and the control group received paraffin oil packs. All packs had the same appearance in terms of sight, smell, and touch. Neither subject nor medical staff knew which kind of oil was used. Paraffin oil was selected for its similar consistency to castor oil and for its lack of any identified biological effect during topical use, as determined by an extensive literature search.

Subjects were placed in beds at a home-like residential facility, and the oil packs were applied directly to the skin of the upper right quadrant of the abdomen. The packs consisted of plain wool flannel cloth 12 by 36 inches in size, folded into three thicknesses for saturation of oil. When folded, the packs were 12 by 12 inches in size, covering the liver and umbilical areas. The packs were applied at 9:00 AM and removed at 11:00 AM, remaining in place for two hours. Dosage consisted of this single pack treatment of two-hour duration with no repetition. Subjects rested in bed during the treatment.

Four blood draws were taken from each subject at specific time intervals in order to evaluate lymphocyte data before and after treatment. A pre-treatment blood draw was taken at 9:00 AM, before the packs were applied (0 hour), for baseline data. Three post-treatment blood draws were taken at 11:00 AM prior to removal of packs (2 hours after onset of treatment), at 4:00 PM (7 hours), and at 9:00 AM the following day (24 hours). Potential treatment effects could be examined at these intervals during a 24-hour period.

For reduction of extraneous variables, subjects refrained from use of nicotine, alcohol and caffeine for the night and morning prior to treatment and for the 24-hour period of testing. Once the packs were removed, subjects were allowed to resume their normal activities with encouragement to avoid physical and emotional stresses.

Blood samples were processed by an independent, nationally known laboratory, SmithKline Bio-Science Laboratories, utilizing a Lymphocyte Evaluation Panel and a Mitogen Panel. The Lymphocyte Evaluation Panel included enumeration of white blood cells, total lymphocytes, T-11 cells, T-4 cells, T-8 cells, and B-cells. The Mitogen Panel included measurement of lymphocyte activation levels when stimulated by phytohemmaglutin (PHA), concavalin A (Con A), and pokeweed (PWM) mitogens, which give information on general T-cell, T-8 cell, and B-cell activity, respectively. The data provided comparisons between 18 experimental group (castor oil) and 18 control group (paraffin oil) subjects at four data points over 24 hours.

Study Results

The data from SmithKline Bio-Science Laboratories were analyzed by an independent statistical consultant, Wilson and Associates. Initial comparisons of group means showed no significant differences between group responses, due to the use of healthy subjects whose blood values were generally within normal ranges. More sensitive analysis was done by Analysis of Variance (ANOVA), where the experimental group (castor oil) showed increases in the number of total lymphocytes and T-11 cells at a significance level of p=.01, which did not occur with the control group (paraffin oil), as shown in Table 1.

Multiple analysis of variance (MANOVA) upheld these findings, as seen in Table 2, identifying total lymphocyte and T-11 cell counts as significant for the experimental group (castor oil), but not for the control group (paraffin oil), with regard to other variables such as age, sex, and circadian (time of day) effects.

The total lymphocyte count for the test sequence of the experimental group (castor oil) was found significant at p=.004. The T-11 cell count for the test sequence of the experimental group (castor oil) was significant at p=.008. Factors of age, sex, and circadian variation were not found to be significant influences on the blood values of either group.

In summary, the study found that castor oil pack therapy of a minimal two-hour period produced an increase in the number of T-11 cells within a 24 hour period following

Results Summary — Oil Pack Data

Significance Levels for Data Proportional to Y(1)*

RESPONSE		GROUP		
Variable	Source	Control	Experimental	Combined
TOTLYM	Among trials	—	.01	.01
	Among cases	—	—	—
WBC	Among trials	.01	.01	.01
	Among cases	.05	.05	.05
T-11	Among trials	—	.01	.01
	Among cases	—	—	—
T-4	Among trials	—	.01	.01
	Among cases	—	.05	—
T-8	Among trials	—	.01	.01
	Among cases	.05	.01	.01
BLYM	Among trials	.05	.01	.01
	Among cases	.01	.01	.01
PHASTIM	Among trials	—	—	.05
	Among cases	—	—	—
CONSTIM	Among trials	—	—	—
	Among cases	.01	—	.01
PWMSTIM	Among trials	—	—	—
	Among cases	—	.01	.01

Table 1

* Y(1) is the baseline (before experimentation) value of the response variable.

SUMMARY OF RESULTS
From Multiple Analysis of Variance

Response Variable		NonConst Variance	Non Normal	Signif Variables	P-Value
T-4	Control Group	nil	nil	x2	.081
T-4	Experimental Group	nil	nil	—	—
T-8	Control Group	nil	nil	x2	.076
T-8	Experimental Group	nil	nil	x1	.094
T-11	Control Group	nil	nil	—	—
T-11	Experimental Group	nil	nil	x1	.008
TOTLYM	Control Group	nil	nil	—	—
TOTLYM	Experimental Group	nil	nil	x1	.004
TOTLYM	Experimental Group	nil	nil	x2	.027

x1: Test Sequence Number
x2: Age Decade of the Subject
x3: Control or Experimental Group
x4: Sex of Subject

TABLE 2

treatment. The concomitant increase in the number of total lymphocytes is due primarily to the T-11 cell increase. The T-11 cell count for the experimental group peaked at the third blood draw, seven hours after onset of treatment, which suggests that the immunomodulation effect builds for several hours, then declines to within normal levels 24 hours after the onset of a single two hour treatment, as shown in Figure 1.

The T-11 cell increase represents a general boost in the body's specific defense status. Lymphocytes actively defend the health of the body by forming antibodies against pathogens and their toxins. T-cell lymphocytes originate from bone marrow and the thymus gland as small lymphocytes that identify and kill viruses, fungi, bacteria, and cancer cells. T-11 cell lymphocytes supply a fundamental antibody capability to keep the specific defense system strong. (21)

DISCUSSION

Beyond establishing the immunomodulation effect of castor oil pack therapy, this study supports the need for further research and raises questions concerning the mechanism whereby the immunomodulation effect occurs.

Further research into castor oil pack therapy should focus first on establishing a stronger effect than was possible with a study of healthy volunteers. A follow-up study was designed by the Fetzer Energy Medicine Research Institute (FEMRI) of the A.R.E. Medical Clinic, in which the protocol of the previous study will be followed in treating persons with the serious, debilitating illness of chronic active hepatitis. The treatment will be of longer duration than the previous study, providing sixteen treatments over a four week period, and the lymphocyte values of the research subjects may prove to be more extreme. This design will test for a stronger effect from castor oil pack therapy, as may be possible under more extreme conditions than the previous study afforded.

If a strong effect is established, then variations in the test protocol should be explored. One variation could be a comparison between castor oil and another vegetable oil, such as corn oil. Another variation might include testing the position of the oil pack over the key elements of the immune system, such as the spleen and the thymus.

The mechanism of the immunomodulation effect of the castor oil pack also needs exploration. We have considered two types of mechanisms: bioenergetic and biochemical. Bioenergetic mechanisms are based on theories which are difficult to test experimentally, due to the limited capability of present electromagnetic detection devices. Biochemical mechanisms are based on the assumption that castor oil has chemical properties that affect the immune system. Biochemical theories are more testable with present technology. Two theories merit primary consideration as possible biochemical immune system trigger mechanisms affected by castor oil: 1) T-cells in the skin; and 2) Prostaglandins.

Regarding the first theory, the skin has been identified as an integral and active part of the immune

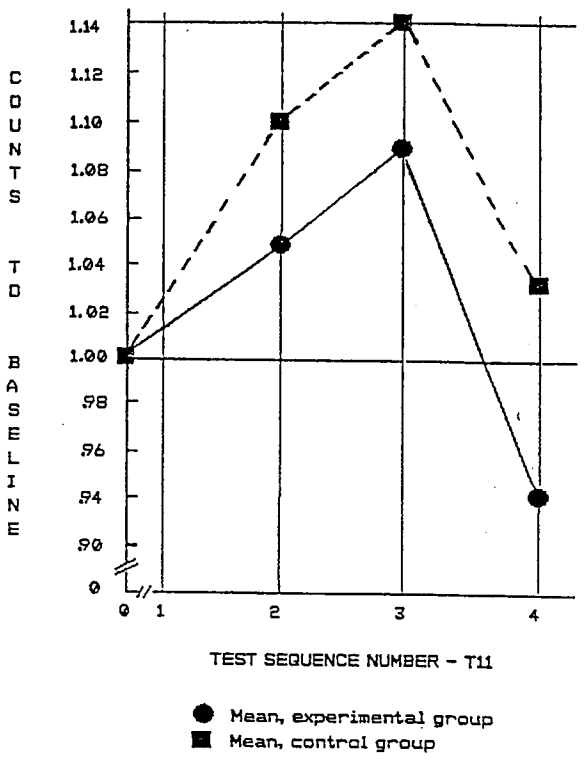

FIGURE 1

system. (22) T-lymphocytes are scattered throughout the skin, primarily in the epidermis and the upper dermis. (23) These T-lymphocytes communicate with and influence the activity of the general immune system. They are capable of stimulating either a localized or a generalized immune reaction. This capability was demonstrated by use of ultraviolet light to cancel the immune reaction to a specific antigen in the skin of mice, where a generalized and not only a localized immune effect was found. (24)

The skin T-cell theory postulates that the absorption of castor oil into the skin triggers T-lymphocytes embedded in the skin, causing them to activate a localized and/or generalized immune reaction. But how would castor oil act as a trigger for dermal T-cells? In searching for an answer to this question, we are led to consider another, perhaps more fundamental, theory concerning prostaglandins.

Prostaglandins consist of a large group of membrane-associated lipids composed of 20 carbon fatty acids containing a cyclopentane ring (five carbon atoms joined to form a ring). (25) Although they were first discovered in prostate gland secretions, they are now known to be present in cell membranes throughout the body. Even though they are synthesized in very small quantities, prostaglandins are potent substances which generate a number of effects upon the body: stimulation of smooth muscle contractions; raising and lowering blood pressure; regulation of metabolism, acid secretion of the stomach, blood-platelet aggregation, and body temperature; control of inflammation and vascular permeability; and transmission of nerve impulses. (26)

If castor oil packs stimulate prostaglandin activity, could this be a mechanism for achieving the wide variety of physiological effects that have been observed concerning castor oil pack therapy in clinical practice? (27) Castor oil creates several physiological effects identical or similar to those attributed to prostaglandins, including stimulation of smooth muscle contractions and control of inflammation. (28) Other correlated effects could be possible, since they have not been researched.

Prostaglandins play key roles in regulating cell division in the body, including B and T lymphocytes, and are therefore involved in the immune response. (29) Prostaglandin-E1 induces differentiation in immature T lymphocytes and can also double the adherence of T lymphocytes to cells infected with virus. (30) Furthermore, since T-suppressor lymphocytes produce Prostaglandin-E1, a reciprocal relationship might exist between prostaglandins and lymphocytes. (31) The emerging role of prostaglandins in immunomodulation suggests a possible mechanism for castor oil effects. Continuing research into the diverse types of prostaglandins might offer specific targets for exploring and specifying this mechanism.

In addition to the similarity of their effects, the chemical structures of castor oil and prostaglandins are analogous. Castor oil is composed of long-chain fatty acids, as are prostaglandins. Is it possible that the body's production of prostaglandins can be stimulated by castor oil? Evidence from a 1980 study at the Pennsylvania State University College of Medicine strongly suggests that oral doses of castor oil for rats stimulated prostaglandin synthesis by the bowel. (32) In fact, this study measured the presence of prostaglandins on the surface of castor oil ingested by the rats and concluded that castor oil produces its cathartic effects in the bowel by stimulating prostaglandin synthesis.

Another chemical link between castor oil and prostaglandins is seen in the ability of castor oil to produce prostanoids, as seen in Figure 2. Prostanoids are very similar to prostaglandins, suggesting that castor oil might act as a biochemical precursor of prostaglandins. (33)

To summarize this theory, it appears possible that the immunomodulation effect of castor oil pack therapy could involve castor oil's documented role in stimulating production of prostaglandins.

Further research into immunomodulation through castor oil packs should consider T-lymphocytes in the skin and prostaglandins as possible mechanisms.

Conclusion

A controlled study by the A.R.E. Clinic's Fetzer Energy Medicine Research Institute in 1987 produced evidence that castor oil pack therapy stimulated the immune system of healthy volunteers through increasing the number of T-11 lymphocytes in the experimental group as compared to the control group. This study supports the need for further research of the optimal use of this therapy for immunomodulation. Consideration should be given to

Nonmammalian Sources of Eicosanoids

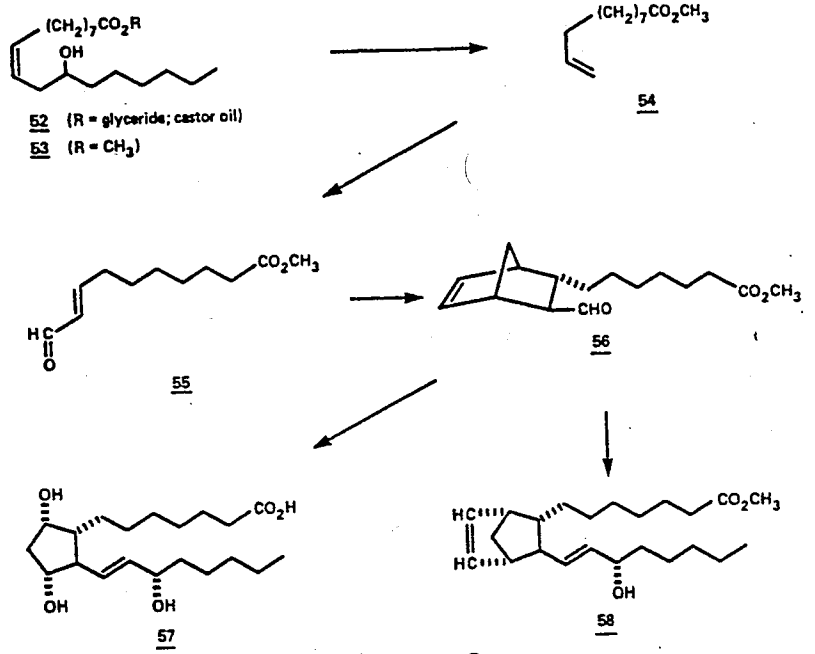

Figure 2
Synthesis of Prostanoids from Castor Oil

study of castor oil pack therapy for ill persons and for possible differentiated immunological effects when the pack is applied to various components of the immune system, such as the spleen and thymus.

ACKNOWLEDGEMENTS

We gratefully acknowledge the contributions to this study of staff, including Gary Grossman, PhD, T. M. Srinivasan, PhD, Zona Dial, and Sherry Janes; consultants Leonard Wisneski, MD, and Daniel Wilson, PhD; and members of the Technical Advisory Board Elmer Green, PhD, Stanley Krippner, PhD, Robert Nunley, PhD, Norman Shealy, MD, PhD, and William Tiller, PhD. We recognize the pioneering clinical contributions of William McGarey, MD, and Gladys McGarey, MD, as setting the foundation for the study. We greatly appreciate the support of John E. Fetzer, founder of the John E. Fetzer Foundation, for the grant that made the study possible.

REFERENCES

1. Morton, Julia F. *Major Medicinal Plants.* Springfield, IL: Thomas; c1977:193.
2. Levy, Martin; Al-Khaledy, Noury. *The Medical Formulary of Al-Samarqandi.* Philadelphia: University of Pennsylvania; c1967.
3. Gaginella, T.S., Phillips, S.F. *Ricinoleic Acid: Current View on an Ancient Oil.* Digestive Diseases: 1975; 20(12): 1171–1177.
4. Fraser, T. *Medical Observations and Inquiries, Vol. 2.* An account of the oleum ricini, commonly called castor oil, and its effects as a medicine, especially in bilious disorders. London; 1762: 235–240.
5. LaWall, Charles H. *Four Thousand Years of Pharmacy.* Philadelphia: Lippincott: c1927: 427–8.
6. Lewis, W. *The Edinburgh New Dispensatory.* Edinburgh; 1797: 225.
7. Badianus, J., Cruz, M. *The Badianus Manuscript, An Aztec Herbal of 1552.* Translated by E.W. Emmart. Baltimore: Johns Hopkins; c1940.
8. Levy, M. *The Medical Formulary or Aqrabadhin of Al-Kindi.* Madison: University of Wisconsin; c1966.
9. Riddle, John M. *Dioscorides on Pharmacy and Medicine.* Austin: University of Texas; c1985.
10. Duke, James A. *Medicinal Plants of the Bible.* New York: Trado-Medic Books; c1983.
11. Stuart, G.A. *Chinese Materia Medica, Vegetable Kingdom.* Shanghai: AM Presbyterian Mission; c1911: 378–379.
12. Bruckstein, A.H. *Laxatives and Cathartics: Uses and Abuses.* NY State Journal of Medicine; 1978; 78(7): 1078–82.
13. Natarajan, S.; Paily, P.P. *Effect of Topical Hydrocotyle Asiatica in Psoriasis.* Indian Journal of Dermatology; 1973; 18(4): 82–5.
14. Saari, M. et al. *Effect of Vehicle on Pilocarpine-induced Miosis.* Acta Opthalmologica; 1978; 56(4): 496–503.
15. Till, Mark A. et al. *HIV-infected Cells Are Killed By rCDR-Ricin A Chain.* Science; 25 Nov. 1988; 242: 1166–1168.
16. Tanabe, T. et al. *On the Acute Toxicity of CT-1341, a New Steroidal Anesthetic Agent.* Hokkaido Igaku Azsshi; 1974; 49(2): 142–52.
17. Neimegeers, C.J. et al. *Loperamide ...a Novel Type of Anti-diarrheal Agent.* Arzeimittelforschung; 1974; 24(10): 1633–6.
18. Takada, K. et al. *Promotion of the Selective Lymphatic Delivery of Cyclosporin A by Lipid-surfactant Mixed Micells.* Journal of Pharmacobiodynamics; 1985; 8(4): 320–3.
19. Yoshikawa, H. et al. *Potentiation of Anti-tumor Effect of Bleomycin by Lipid-surfactant Mixed Micells I. In Vivo and Tumor-neutralizing Activity Against Mouse Ehrlich Ascites Tumor and Rat Ascities Hepatoma AH66.* Journal of Pharmacobiodynamics; 1985; 8(4): 305–310.
20. McGarey, W.A. *Edgar Cayce and the Palma Christi.* Virginia Beach, VA: Edgar Cayce Foundation; c1970.
21. Grieco, Michael. *Immunodiagnosis for Clinicians.* Year Book Medical Publishers; c1983.
22. Edelson, Richard L.; Fink, Joseph M. *The Immunologic Function of Skin.* Scientific American; 1985; 252(6): 46–53.
23. Patterson, A.K.; Edelson, Richard L. *Interaction of T Cells with the Epidermis.* British Journal of Dermatology; 1982; 107(1): 117–22.
24. Kripke, Margaret L.; Morison, Warwick L. *Studies on the Mechanism of Systemic Suppression of Contact*

APPENDIX A

*CASTOR OIL PACKS**

Materials Needed:

1. Wool flannel cloth	or	1. Wool Flannel Pack
2. Plastic sheet – medium thickness		2. C.O. Pack Holder
3. Bath towel		3. Electric Heating Pad
4. Two safety pins		

Instructions for Use:

Fold a piece of wool flannel (cotton flannel is all right, if wool is not available or there is an allergy to wool) so that it is 3 layers thick and measures about 12" x 12". This size is recommended for abdominal application—other areas would use different sizes. Pour castor oil onto the cloth, enough so that the cloth is wet but not dripping. Then apply the cloth to the area needing treatment. For general detoxification purposes, apply the pack over the liver area. Then cover the pack with a piece of plastic—Saran Wrap or a garbage bag will do. Then wrap a towel, folded lengthwise, around the entire area and fasten it with safety pins. The pack should be applied a minimum of one hour and can be worn all night. If you have a Castor Oil Pack Holder, you will not need the plastic or the towel. It saves much "set-up" time. The skin can be cleansed after the treatment by using soda water (two teaspoons of baking soda added to a quart of water).

Keep the flannel pack in a plastic container for future use. It is possible to use the same pack for different problems, and need not be discarded after one application, but check with your physician about specifics. Typically, you can use the same pack for a number of injuries, but when dealing with a very toxic condition it would be best to throw the pack away when the condition is healed. DO NOT ATTEMPT TO DRYCLEAN YOUR PACK. This adds unwanted chemicals.

Frequency: 1 – 2 – 3 – 4 – 5 – 6 – 7 consecutive days per week.

Note: Take olive oil by mouth after every third treatment, if directed, in amount tolerated.

* Personal Communication with Harvey Grady: Many NDs have "discovered" castor oil roll-on applicators which allow the benefits of this protocol without the mess of sticky wool or flannel. Ease of use enhances patient compliance. Make sure the treated area is well saturated with castor oil. —Emily Kane, ND 1997

Hypersensitivity by Ultraviolet B Radiation. Photodermatology; 1986; 3: 4–14.

25. *Dorland's Illustrated Medical Dictionary.* 26th Edition. Philadelphia: Saunders; c1985: 1077–1078.
26. Tortora, Gerard; Anagnostakos, Nicholas. *Principles of Anatomy and Physiology.* Canfield; c1978: 394.
27. Ibid., McGarey.
28. Horrobin, David F. *Prostaglandins, Physiology, Pharmacology and Clinical Significance.* Montreal: Eden; c1978.
29. Luderer, J.R. et al. *Mechanism of Action of Castor Oil: a Biochemical Link to the Prostaglandins.* Advances in Prostaglandin, Thromboxane, and Leukotrine Research; 1980: 8: 1633–5.
30. Awouters, F. et al. *Delay of Castor Oil Diarrhea in Rats: A New Way to Evaluate Inhibitors of Prostaglandin Biosynthesis.* Journal of Pharmacy and Pharmacology; 1978: 30: 41–5.
31. Goodwin, J.S.; Bankhurst, A.D.; Messner, R.P. *Suppression of Human T-cell Mitogenesis by Prostaglandin, Existence of a Prostaglandin–producing Suppressor Cell.* Journal of Experimental Medicine; 1977; 146(7): 1719–34.
32. Zurier, R.B.; Dore-Duffy, P.; Viola, M.V. *Adherence of Human Peripheral Blood Lymphocytes to Measles-infected Cells. Enhancement by Prostaglandin E1.* New England Journal of Medicine; 23 June 1977; 296(25): 1443–6.
33. Bundy, Gordon L. *Nonmammalian Sources of Eiconsanoids.* Advances in Prostaglandin, thromboxane, and Leukotriene Research; 1985; 14.