

Wang's Martial Arts

92-B Wilson Rd.
Humble, TX 77338
U.S.A.

Phone (281) 548-1638, (281) 682-3387
E-mail: wang3888@embarqmail.com
Web site: www.WangsMartialArts.com

School Phone number:
281-548-1638,
281-682-3387 (Cell)

May 2014 Newsletter Summary

Kung Fu Rank Test

Date: 9-14 yrs: 7-24-2014, Thursday, 6-8:30 pm
5-8 yrs: 7-26-2014, Saturday, 1:30-3:30 pm
15 yrs +: 7-26-2014, Saturday, 3:30-5:30 pm
Must register on or before 7-21-2014.
Test fee : \$35.00 and up

Proverbs 12-11.

" Those who work their land will have abundant food,
but those who chase fantasies have no sense."

Tai Chi Rank Test

Date: 8-9-2014 (Sat.)
Time: 12 noon – 2:00 pm

Rank Test Results -May 3, 2014

Age 5 - 8 years old
Joshua Delgado - Yellow
Jameson Ezzell - Yellow
Lilly Robinson - Yellow
Alfred Kai Marayag - Orange
Aiden Traylor - Orange/stripe
Nathan Johnson - Orange/stripe
Noen Zelaya - Green
Santiago Guerreo - Green/stripe
Jackson Robinson - Green/stripe
Joseph Alonso - Blue/stripe
Ethan Fu - Blue/stripe

Age 9 - 14 years old
Kimberly Limones - Yellow/stripe
Kendall People - Orange
Anne Gutierrez - Orange
Luis Limones - Orange/stripe
Francisco Zelaya - Green
joseph Hellsten - Purple
Dezie Hellsten - Purple
Nick Limones - Purple/stripe
Brandon Saton - Blue
Mark Limones - Blue
Madeline Briles - Blue
Ian Fu - Blue/stripe
Libeth Nunez - Red/stripe
Luis Nunez - Red/stripe

Age 15 -108
Cleotis Washington - Yellow
Michael Gamoras - Yellow/stripe
Jeannette Adams - Yellow/stripe
Therese Harris - Orange
Ruby Abbott - Orange
Adrian Zaldivar - Orange/stripe
Francisco Rocha - Green/stripe
Charles Moore - Green/stripe
Chantel Moody - Green/stripe
liliana Campa - Purple
Dennis Cruz - Blue/stripe
Charles Cates - Red
Roberto Alvarado - Red/stripe



Weapon Class;
Basic Sabre -
5/9, 5/16, 5/23
Nunchaku -
6/6/14
Adv. Sabre -
6/13, 6/20, 6/27
Basoc Bo -
7/11, 7/18, 7/25

See detail in this newsletter.

No class on 5-26-14 (Monday)
due to Memorial Day.

No class on 7-19-14 (Saturday)
Tournament in Dallas, TX

Wang's Martial Arts College Student
Scholarship Fund:
2009 Scholarship Fundraising Banquet -
\$628.98

Inner-School tournament:
December 5, 2009 - \$105.00
March 6, 2010 - \$85.00
July 10, 2010 - \$100.00
December 6, 2010 - \$105.00
March 19, 2011 - \$80.00
June 4, 2011 - \$115.00
September 10, 2011 - \$150.00
December 3, 2011 - \$110.00
March 3, 2012 - \$150.00
Outdoor Training (3-25-12) - \$100.00
June 30, 2012 - \$160.00
September 29, 2012 - \$185.00
December 15, 2012 - \$125.00
May 4, 2013 - \$90.00
August 10, 2013 - \$105.00
November 2, 2013 - \$85.00
March 29, 2014 - \$90.00
**Total - \$2478.98 - \$300 - \$300 =
\$1878.98**

**\$300 scholarship to Ms. Megan Payne
on 06-04-12**

**\$300 scholarship to Mr. Wilfred Hung
on 06-24-13**

Current student at Wang's Martial Arts
who is taking 12 or more college credit
hours at semester final report card:

All A's - \$300.00
A & B's - \$200.00
All B's - \$100.00

Current Black Belt at Wang's Martial
Arts who is taking 6 or more college credit
hours at semester final report card:

All A's - \$500.00
A & B's - \$300.00
All B's - \$200.00

Red, Brown and Black Belt Class

Every Saturday morning from 9:00 – 10:00 am

Tournament Points: Don't forget to turn in your
points after each tournament for a chance to win
a seven foot trophy at the Chinese New Year
Banquet!

1st Place-12pts; 2nd Place-9pts; 3rd Place-6pts;
Participation-3pts

Report Card Points – Turn in your report cards
all year long for a chance to win a seven foot
trophy at the Chinese New Year Banquet!

All A's-12pts; A's & B's- 9pts; All B's-6pts;
Turn in your report card – 3pts

Black Belt club & Accelerated program
rank test:

Date: 6-21-2014 (Saturday)

Time: 2 - 4:30 pm

New Student:

Corin Jones, Noe Juarez,
Rain Juarez, Hector Flores,
Cruz Flores, Alejandro Vargas,
Mireles Veronique,
Jonathan Mireles

Welcome!

Black Belt Club & Accelerated Program

Tournament Competition Class:

Date: 5-30-14 (Friday)

Time: 8:00 – 9:00 pm

Nunchaku Class:

Date: 6/6/2014 (Friday)

Time: 8:00 – 9:00 pm

Conditioning & Reaction Drill Class:

Age 5 – 14 years old

Date: 5/8/2014 (Thursday)

Time: 8:00 – 9:00 pm

Age 15 – 98 years old

Date: 5/01/2014 (Thursday)

5/08/2014 (Thursday)

5/15/2014 (Thursday)

5/22/2014 (Thursday)

5/29/2014 (Thursday)

Time: 8:00 – 9:00 pm

Tournament Point:

David Ah-Bel Lara 42

Chantel Moody 21

Be sure turn in your tournament point.
For point 2014, every one must turn in
before 12-31-2014.

Brown and Black rank test

October 14, 2014 (Tue.) 6 – 8 pm

October 16, 2014 (Thur.) 6 – 8 pm

October 18, 2014 (Sat.) 9 am – 3 pm

May Birthday

Clifford Reynolds 5/12

Paul Turk 5/23

Roberto Matsumura 5/20

Steve Castelo 5/29

Emmory Leach 5/14

J.R. Phillips 5/7

Virginia Gordman 5/15

Gina Payne 5/15

Philip Spruell 5/20

Chris Castillo 5/25

Julius Herron 5/29

Justyn Davis 5/27

Deztanie Hellsten 5/00

Brian peveto 5/10

Happy Birthday

Report card point:

Alfred Kai Marayag 4.50

Libeth Nunez 4.50

Jarrett Almond 3.00

Jameson Ezzell 3.00

Luis Nunez 2.25

Kendell People 2.25

Mark Lmones 1.50

Luis Limones 0.75

Julian Rosas 0.75

Be sure turn in a copy of your report card as
you receive it. For point 2014, every one
must turn in before 12-31-2014.



* For all student's family members & guests, please be silent during the class in progress. The instructors and students require all the concentrations to teach and to learn. Please do not distract the class by talking.

All young people learning from parents, teachers, adults and their surroundings. Please be good example to all our young generations to observe the rules. We are counting on them to build better and brighter future for us and for themselves.



Kung Fu or Tai Chi
One Month Special- \$129.00
Free uniform (\$49.95) & registration (\$30.00)
Saving of \$79.95
(Good till 5-31-2014.)

Wang's Martial Arts
 92- B Wilson Road
 Humble, TX 77338

(281) 682-3387, (281) 548-1638

www.WangsMartialArts.com

<u>KUNG-FU</u>			
Adults	(Age 15-98)	Tue. Sat.	11:00 - 12:00 Noon
		Mon./Tue./Thur./Fri.	7:00 - 8:00 PM
		Mon./Wed.	8:00 - 9:00 PM
		Tues./Thur.	4:00 - 5:00 PM
Children	(Age 5 - 14)	Tue./Thur.	5:00 - 6:00 PM
		Mon./Tue./Wed./Thur./Fri.	6:00 - 7:00 PM
		Tue./Thur.	7:00 - 8:00 PM
		Saturday	10:00 - 11:00 AM
Family class	(Age 5-98)	Tue./Thur.	5:00 - 6:00 PM
		Tue./Thur.	7:00 - 8:00 PM
		Mon./Tue./Wed./Thur./Fri.	6:00 - 7:00 PM
		Saturday	10:00 - 11:00 AM
<u>T'AI CHI CHUAN</u>			
All ages		Tue. Sat.	12:00 Noon- 1:00 PM
		Mon./Wed./Fri.	5:00 - 6:00 PM
		Wed.	7:00 - 8:00 PM
		Tue./Thur.	8:00 - 9:00 PM

Name: _____ is guest of _____ .
 (Name of current student)

The current student will get \$10 gift card of Starbuck.

Kung Fu Brown & Black belt Rank Test Results - 4/12/14

Susan Fischman Brown
Brandon Roll-Bush - Brown
Melanie Campa - Brown
Liliana Campa - Brown
Conner Roll-Bush - Brown
Theunis Oliphant - Brown/stripe
kevin Papa - Brown/stripe
Valerie Campa - Jr. Black

Congratulations!



Tai Chi Rank Test Result - 4/26/14

Sharon Mikolajczak - Brown

Dung Nguyen - Blue

Congratulation!





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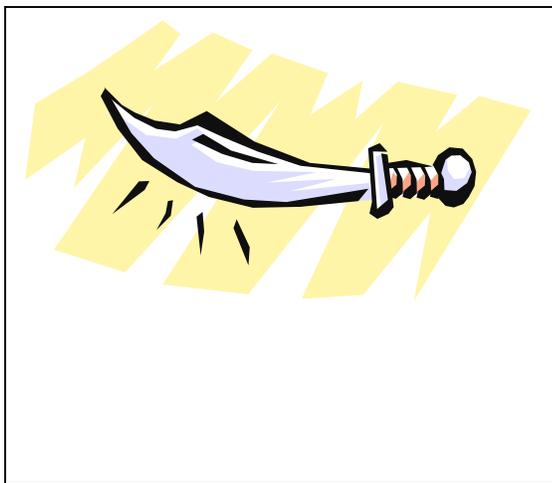


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Web site www.WangsMartialArts.com

Baisc Sabre



Date: May 09, 2014 (Friday)
May 16, 2014 (Friday)
May 23, 2014 (Friday)

Time : 8:00 - 9:00 PM

Place : Wang's Martial Arts
92 – B Wilson Road
Humble TX, 77338
(281) 548-1638
(281) 682-3387

Pre-requisite: Adults (15 years old and up) –
Yellow belt and up.

Jr. students (5–14 years old)- green belt and above.
(Minimum 6 people register.)

Fee : \$39.00
\$19.50 for review class

REGISTRATION FORM

NAME: _____ DATE: _____

STREET: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE (HOME): _____ PHONE (WORK): _____

Phone (cell): _____

e-mail: _____

Amount Paid _____ .

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Baisc Bo



Date: July 11, 2014 (Friday)
July 18, 2014 (Friday)
July 25, 2014 (Friday)

Time : 8:00 - 9:00 PM

Place : Wang's Martial Arts
92 – B Wilson Road
Humble TX, 77338
(281) 548-1638
(281) 682-3387

Pre-requisite: Adults (15 years old and up) –
Yellow belt and up.
Jr. students (5–14 years old)- green belt and above.
(Minimum 6 people register.)

Fee : \$39.00
\$19.50 for review class

REGISTRATION FORM

NAME: _____ DATE: _____

STREET: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE (HOME): _____ PHONE (WORK): _____

Phone (cell): _____

e-mail: _____

Amount Paid _____ .

Phone (281) 548-1638, (281) 682-3387
E-mail wang3888@embarqmail.com
Web site [http://www. WangsMartialArts.com](http://www.WangsMartialArts.com)

Nunchaku Class



Date: June 6 2014 (Friday)

Time : 7:00 - 8:30 PM

Place : Wang's Martial Arts
92 – B Wilson Road
Humble TX, 77338
(281) 548-1638
(281) 682-3387

Fee : \$19.00
Free for Brown, Black, Jr. Black
& Accelerated program.

Age 15 to 80 year old - any rank.
Age 9 - 14 years old - Yellow belt above
Age 5 - 8 years old - Green belt above

Need bring your own nunchaku or purchase a foam
nunchaku for \$7.95 - \$14.00

REGISTRATION FORM

NAME: _____ DATE: _____

STREET: _____

CITY: _____ STATE: _____ ZIP: _____

PHONE (HOME): _____ PHONE (WORK): _____

Phone (Cell): _____

e-mail: _____

Amount paid _____ .

Wang's Martial Arts

92 – B Wilson Rd.
Humble, TX. 77338
U.S.A.

Phone (281) 548-1638
(281) 682-3387
e-mail wang3888@embarqmail.com
Web site www.WangsMartialArts.com

Advanced Sabre Class

Date : June 13, 2014 (Fri.)
June 20, 2014 (Fri.)
June 27, 2014 (Fri.)

Time : 8:00 – 9:00 PM

Place : Wang's Martial Arts
92 – B Wilson Rd.
Humble TX, 77338
(281) 548-1638
(281) 682-3387

Fee : \$59.00 / \$29.50 for Review

(Pre-requisite must learned basic Sabre)
(9-108 years old, Red, Brown & Black)



REGISTRATION FORM

NAME: _____ DATE: _____

STREET: _____

CITY: _____ STATE: _____ ZIP: _____

e-mail: _____

PHONE (HOME): _____ PHONE (WORK): _____

Cell phone: _____ Amount Paid _____

Phone (281) 548-1638, (281) 682-3387
e-mail: wang3888@embarqmail.com
Web site: www.WangsMartialArts.com

INNER SCHOOL TOURNAMENT

Date: 8-2-2014 (Saturday)
Time: Ages 5 - 80 2:00 PM – 5:00 PM
Place: Wang's Martial Arts
92 – B Wilson Road at First St.
Humble, TX 77338
(281) 548 - 1638
Entry Fee: \$45.00 up to two events
\$5.00 additional event
\$5.00 goes to scholarship fund



Listed below are the divisions; in each, a first, second, and third place trophies will be awarded.
Encouragement awards are given for everyone who does not place.

***** **FORMS*******

Ages 5-8 Beg./ Int./ Adv.
Ages 9-14 Beg./ Int./ Adv.
Ages 15-17 Beg./ Int./ Adv.
Ages 18-80 Beg./ Int./ Brown/ Black.
TAI CHI Beg./ Int./ Adv.

***** **WEAPONS*******

Ages 5-14 Beg./ Int./ Adv.
Ages 15-17 Beg./ Int./ Adv.
Ages 18-80 Beg./ Int./ Adv.

***** **SPARRING*******

Ages 5-8 Beg./ Int./ Adv. (Boys & Girls)
Ages 9-14 Beg./ Int./ Adv. (Boys)
Ages 9-14 Beg./ Int./ Adv. (Girls)
Ages 15-17 Beg./ Int./ Adv. (Boys)
Ages 15-17 Beg./ Int./ Adv. (Girls)
Adult Men Beg./ Int./ Brown & Black.
Adult Women Beg./ Int./ Brown & Black

Registration form for INNER-SCHOOL TOURNAMENT

NAME: _____ DATE: _____

ADDRESS: _____

CITY: _____, STATE: _____ ZIP: _____

HOME PHONE: _____ WORK PHONE: _____

CELL PHONE: _____ e-mail address: _____

RANK: _____ AGE: _____ DATE OF BIRTH: _____

DIVISIONS: FORMS _____ SPARRING _____ WEAPONS _____ Amount Paid _____

LEGENDS OF KUNGFU

World Martial Arts Championship
世界武林名劍大會武術錦標賽

July 18 - 20, 2014

Hilton DFW Lakes
Executive Conference Center
Dallas - Fort Worth Airport Area, Grapevine, TX



Greetings!

We would like to invite you to the 2014 LEGENDS of Kung Fu World Martial Arts Championship. This will be the 16th annual LEGENDS Main Event and will be in conjunction with the USA Chin Woo Federation's 27th Anniversary!

Come see and be a part of all styles of Kung Fu & Taiji from around the world, experience demonstrations by Masters & Grandmasters and a Lion Dance show. Hosted by the USA Chin Woo Federation and sanctioned by the US Traditional Kung Fu Wushu Federation, we aim to make your visit to Dallas pleasant & memorable, and to present you with another immensely challenging competition that you will enjoy! We hope to see ya'll there!

Jimmy Wong
Tournament Chairman & Chief Organizer
President, USA Chin Woo Federation



Mailing Address for Registration Forms & Inquiries:

Chin Woo Tournament Inc.
1778 N. Plano Rd. Ste. 108
Richardson, TX 75081

Phone: (214) 878-4598
Email: legendsofkungfu@gmail.com



WWW.LEGENDSOFKUNGFU.COM



Wu Martial Arts Association

9777 Harwin Dr., #509 • Houston, TX 77036
(713) 780-4007 • www.wumartialarts.org

Dear Shifu:

Please post the following information to your students to encourage them to continue their hard working in the martial arts field.

The purpose of the scholarship:

Over the years, we have seen the positive benefits and effects of Chinese martial arts on adolescents and adults alike. We find that it enhances physical strength and mental well-being. We also find that the art brings people together. Relationships are formed, and friendships are forged. The practice of the art also promotes the preservation of an ancient art, a culture, and the countless virtues that come with it.

So Wu martial Arts Association decided to offer scholarship to college or college bound students, in order to award their **persistence** and **dedication** in Chinese Martial Arts. We take application for 2014 from Feb.1 - May 30. Please check detail and get application form from our website: www.wumartialarts.org.

Sincerely,
Ernie Wu

宏武協會基金會鼓勵青年學子申請獎學金

宏武協會秉持中華武術真正價值是宏揚武德，文化薪火相傳，而武術修行法則在於「動靜並修、內外兼養」，增進國民身心健康，培育文武兼備優秀人才，尊師重道，謙恭待人，熱誠服務，慈悲為懷，提升身心靈整體的健康，培養出圓融無礙的健全人格，和衷共濟，促進社會祥和。

為鼓勵海外學生們更好的學習中華文化和中華武術功夫，特別成立基金會，提供獎學金子高中應屆畢業生及大一至大三學生，以臻達構建多民族文化元素的和諧社會。

獎學金申請自 2014 年 2 月 1 日 至 5 月 30 日，申請資格須要練習武術四年以上，在武術上有優良表現及貢獻，學業平均在 B 以上，尊師重道嚴守武德，表格寄至宏武協會(Wu Martial Arts Association) 9777 Harwin Dr. #509, Houston, TX 77036。凡申請獎學金事項，請至網站 www.wumartialarts.org 查閱下載或電話聯絡(713)780-4007。

宏武協會會長吳而立

Eligibility:

Applicants to the Scholarship Program must, at the time of the application:

- ▲ Be a U.S. citizen;
- ▲ Plan to enroll full-time as an undergraduate at an accredited U.S. four-year college or university for the entire upcoming academic year;
- ▲ Have studied one or more styles of Chinese Martial Arts – Kung Fu, Wu Shu, Tai Chi, or Shuai Jiao – for a minimum of four (4) years; and
- ▲ Have a minimum average GPA of 3.0 on a 4.0 scale (average B); and
- ▲ Be able to provide necessary proof for the above.

Selection Process:

Scholarship recipients are selected based on the following factors:

- ▲ Achievements in martial arts (e.g., tournament participation and medals, contribution to the advancement of martial arts);
- ▲ Academic achievement;
- ▲ A one to two page essay explaining what the study of martial arts has meant to the applicant (double-spaced, 12 pt, Times New Roman font) ; and
 - *The applicant consents to the publication and use of the essay by WMAA.
- ▲ Two recommendation letters.

Award Amount

Awards are for undergraduate study and pertain to a single academic year. For the year 2014, the Wu Martial Arts Scholarship will make awards of \$1000 to one male and one female students.

Application Procedure:

All applications must be submitted in writing on or before May 31, 2014 to:

Wu Martial Arts Association Scholarship
9777 Harwin Drive, #509
Houston, TX 77036

Applicants are responsible for submitting all materials on time and in ONE ENVELOPE.

Incomplete applications will not be evaluated. Applications are complete and valid only when all of the following materials have been received:

Applicants should submit the following:

- ▲ Completed application form,
- ▲ Copy of your college acceptance letter (for entering Freshmen only),
or other documentations reflecting an intent to enroll for college/university admission in the upcoming academic year.
- ▲ Proof of enrollment and/or participation in Chinese martial arts for the past four (4) years.
- ▲ School transcript for the past academic year.
- ▲ Two recommendation letters.
- ▲ A one to two page essay explaining what the study of martial arts has meant to the applicant

Selection of recipients is made at the discretion of the Wu Martial Arts Association upon consideration of the above factors. Family members of the Association are ineligible to participate.



Wu Martial Arts Association

9777 Harwin Dr., #509 • Houston, TX 77036

(713) 780-4007 • www.wumartialarts.org

Application Form

2014

1. Application Data

Last Name _____ First Name _____ Middle Initial _____
 Permanent Home Mailing Address _____ Apt. # _____
 City _____ County _____ State _____ Zip _____
 Home phone _____ Cell phone _____
 Email address _____

Date of Birth: Month _____ Day _____ Year _____

Are you a U.S. Citizen? Yes No (You must be a U.S. citizen to apply)

Gender: Male Female

Race/Ethnicity: American Indian/Alaska Native African American Multi-Racial

(optional) Caucasian Asian Hispanic/Latino Native Hawaiian/Pacific Islander

Where did you hear about the Wu Martial Arts Scholarship Program

2. Family / Household Information

With whom do you live?

Name	Relation to you	Age

Total Household Income \$0-\$24,999 \$25,000-\$49,999 \$50,000-\$74,999 \$75,000-\$99,999 \$100,000+

Where were you born? (Country) _____ How long have you lived in the U.S.? _____

Is English your first language? Yes No If not, what is your first language? _____

Are you among the first generation in your immediate family to attend college? Yes No

3. High School and College Data

School Name _____ City _____ State _____

Graduation Date: Month _____ Year _____

If you are in the high school, please list the college you plan to attend in 2014.

School Name _____ City _____ State _____

Expected Year in School: Fresh Soph. Jr. Sr.

List all special awards and honor you have received in the past four years (in high school or college).

Special Awards/Honors	Received From	Date Received

4. School Activities

List all school activities in which you have participated in the past four years (e.g. student government, music, sports, etc.) Note all offices held.

Activity	Number of Years	Offices held

5. Community Service / Volunteer Activities

List all community activities in which you have participated without pay during the past four years.

Organization	From (mo/yr)	To (mo/yr)	Activities

5. Martial Arts Experience (attach additional sheets as needed)

List all martial arts activities in which you have participated,

Organization/Sifu	From (mo/yr)	To (mo/yr)	Style/Description

6. Martial Arts Competition (attach additional sheets as needed)

List all martial arts tournaments attended and any medals and awards received if applicable.

Organization	Tournament Name/Location	National, Regional or Local	Date	Award / Medal

7. Rank, GPA and Test Score Information from School Official for Entering Freshmen

Please have this section completed by the appropriate school official. In addition, an official transcript of grades **MUST** be sent with this application. **A clear explanation of the school's grading scale must also be submitted.** Grade reports are not acceptable.

Class Rank	Cumulative GPA	SAT			ACT				
		Critical Reading	Math	Writing	English	Math	Reading	Science	Comp
Applicant Ranks _____	Weighted _____ /4.0								
On a class of _____	Unweighted _____ /4.0								

School Official's Signature _____ Date _____ Title _____

8. Required Attachments

- Copy of your college acceptance letter (for entering Freshmen only) or other documentations reflecting an intent to enroll for college/university admission in the upcoming academic year.
- Proof of enrollment and/or participation in Chinese martial arts for the past four (4) years.
- School transcript for the past academic year.
- Two recommendations letters.
- A one to two page essay explaining what the study of martial arts has meant to the applicant (double-spaced, 12 pt, Times New Roman font). *The applicant consents to the publication and use of the essay by WMAA.

9. Statements and Signatures

I acknowledge all decisions are made by the Wu Martial Arts Association. I certify that I meet the eligibility requirements of the program as described in the guidelines and the information provided is true, complete and correct to the best of my knowledge. If requested, I will provide proof of information such as the first two pages of my parent(s)/guardian(s)' most recent IRS Form 1040. Falsification of information may result in termination of any award granted.

Applicant's Signature _____ Date _____

Parent's or Guardian's Signature _____ Date _____

(Required if applicant is under age 18)

Diabetes and the Environment

Pesticides

Pesticides include a number of chemicals, including herbicides and insecticides. Some of the pesticides discussed below include the widely-used organophosphate pesticides (including malathion, diazinon, parathion, and chlorpyrifos), atrazine (widely used in the U.S. but banned in Europe), and many others. (For information on banned organochlorine pesticides such as DDT, see the persistent organic pollutant page).

Type 2 diabetes, insulin resistance, and body weight

Longitudinal studies in humans

The strongest evidence for the ability for environmental exposures to contribute to the development of diabetes comes from longitudinal studies. These are studies that take place over a period of time, where the exposure is measured before the disease develops.

A study of pesticide applicators in the U.S. found that diabetes incidence increased with the use (both cumulative lifetime days of use and ever use) of seven pesticides: aldrin, chlordane, heptachlor, dichlorvos, trichlorfon, alachlor, and cyanazine. Those who had been diagnosed more than one year prior to the study were excluded, and the participants were followed over time, ensuring that exposures were reported prior to diagnosis. Most participants probably had type 2 diabetes, although the study did not distinguish between type 1 and type 2. While these people were exposed occupationally, many of these pesticides are available to the general public. This study was based on data from the Agricultural Health Study, which includes over 33,000 participants from Iowa and North Carolina (Montgomery et al. 2008).

Another longitudinal study, also using data from the Agricultural Health Study, looked at exposure data from farmers' wives. It found that diabetes incidence was associated with exposure to five pesticides: three organophosphate pesticides: fonofos, phorate, and parathion; as well as the organochlorine pesticide dieldrin, and the herbicide 2,4,5-T (Starling et al. 2014).

Cross-sectional studies in humans

Cross-sectional studies are studies that measure exposure and disease at one point in time. These provide weaker evidence than longitudinal studies, since the disease may potentially affect the exposure, and not vice versa.

A survey of farmers from Saskatchewan, Canada, found that men who worked with insecticides had an increased risk of diabetes as compared to farmers who did not work with insecticides. On the other hand, overall, living on a farm was associated with a decreased risk of diabetes (as compared to other rural residences), probably due to the outdoor lifestyle (Dyck et al. 2013).

During the 1980s and 1990s in the northern U.S. Midwest, death rates from type 2 diabetes were higher in counties that had a higher level of spring wheat farming than in counties with lower levels of this crop. The herbicide 2,4-D is commonly used on this crop. A study compared people who have had a previous exposure to 2,4-D to those who had non-detectable levels of exposure, and found that exposure to 2,4-D was associated with adverse changes in glucose metabolism, a possible predisposing factor for diabetes. The effects were only seen in people with low levels of HDL, the "good" cholesterol (Schreinemachers 2010).

A study of the staff of an Australian insecticide application program found higher mortality rates for diabetes (probably type 2), as compared with the general Australian population, especially people reporting occupational use of herbicides (Beard et al. 2003).

Urinary levels of a dichlorophenol pesticide, 2,5-DCP, has been associated with obesity in U.S. children (Twum and Wei 2011), as well as in U.S. adults (Wei et al. 2014). In both of these studies, the risk of obesity increased as exposure increased, in a dose-dependent manner. These studies suggest that exposure to the fumigant insecticide paradichlorobenzene may increase the risk of obesity.

A growing concern: Pesticides in developing countries

Exposure to high levels of pesticides is common in developing countries, especially organophosphate pesticides. A study of these farmers showed that they had higher blood glucose levels (both fasting and after a glucose tolerance test), as well as neurological symptoms such as depression, as compared to a comparison group who were not exposed (Malekirad et al. 2013).

A study of Egyptian farmers (without diabetes) found that those with higher levels of malathion in their blood had higher insulin resistance, waist circumference, and body mass index (BMI). Not surprisingly, the farmers, who had been working with pesticides for 15-20 years, had higher levels of malathion in their blood than the comparison group who were not farmers (Raafat et al. 2012).

Pesticides may contribute to the growing rates of diabetes in sub-Saharan Africa. People in these countries may be more susceptible to the effects of pesticides due to a variety of factors, such as undernutrition, lack of access to health care, genetic predisposition, high exposure levels, and exposure during developmental periods, such as in the womb and during childhood (Azandjeme et al. 2013).

Pesticide poisonings in humans

There are case studies documented in the scientific literature of people who developed high blood sugar and what was thought to be diabetic ketoacidosis immediately after consuming pesticides (e.g., in a suicide attempt). For example, a 15-year old girl, distressed from poor exam results, ingested an organophosphorous pesticide. Ten hours later, in the hospital, she had very high blood sugar levels and ketones in her urine, signs of diabetes. By the second day of treatment, however, her glucose levels were normal, and remained normal 4 weeks later. Pesticide poisoning can be misdiagnosed as diabetes due to some of the same symptoms (Swaminathan et al. 2013).

Laboratory studies

Long term, low dose exposure to the herbicide atrazine resulted in increased body weight and increased insulin resistance in rats. Those rats that were exposed and also ate a high-fat diet showed exacerbated weight gain and insulin resistance (Lim et al. 2009).

A number of organophosphate pesticides have been found to disrupt beta cell function, including malathion (Hectors et al. 2011). Animals exposed to malathion develop high blood sugar levels, and their carbohydrate metabolism is affected in ways that could promote insulin resistance (Rezg et al. 2010). Exposure to low doses of chlorpyrifos for 2-4 weeks resulted in high blood glucose levels in rats (Lukaszewicz-Hussain, 2014).

Animals exposed to diazinon, another organophosphate pesticide, were found to have impaired glucose tolerance and lower insulin levels (Pakzad et al. 2013). Diazinon has also been found to cause the liver to release glucose into the blood in rats, supporting the idea that diazinon exposure may predispose people to diabetes (Teimouri et al. 2006).

A fungicide, tolyfluanid, used in paint and on fruit crops, has been shown to promote the formation of fat cells as well as induce insulin resistance in these cells. These findings raise a concern that this chemical, an endocrine disruptor, could disrupt metabolism and contribute to the development of diabetes (Sargis et al. 2012).

When researchers exposed fat cells to imidacloprid, a neonicotinoid insecticide (now restricted in Europe due to bee colony collapse disorder), they found that there was increased fat accumulation in these cells (Park et al. 2013). When they exposed fat, liver, and muscle cells to this insecticide, they found that there was increased insulin resistance. Essentially, the exposed cells did not take up as much glucose as unexposed cells did (Kim et al. 2013).

When rats were exposed to omethoate, a commonly used insecticide in most developing countries, the effects suggested that omethoate has the potential to cause insulin resistance (Zhang et al. 2014).

Exposure during development

Early life exposure to organophosphate pesticides causes metabolic dysfunction resembling pre-diabetes in animals, especially when adults eat a high-fat diet (Slotkin 2011). Male rats exposed to the organophosphate pesticide chlorpyrifos just after birth, showed high insulin levels when not fasting as adults that resembles the metabolic pattern seen in type 2 diabetes in humans (Slotkin et al. 2005).

Male rats exposed to low doses of parathion just after birth showed high blood glucose levels and increased weight gain later in life (Lassiter et al. 2008). These authors point out that animals exposed to organophosphates as adults show increased weight gain and other diabetes-like changes. Exposures in early development may be even more significant. A further study by the same authors found that unlike chlorpyrifos and malathion, the effects of early life parathion exposure in rats lessened by adolescence, although other changes occur later that affect glucose utilization. The effects of parathion were not worsened by a high fat diet, but the effects of this diet and parathion were similar to each other (Adigun et al. 2010).

When pregnant mice were exposed to very low levels (400-times below the EPA's "no observed adverse effect level") of triflumizole, a fungicide used on food and ornamental crops, their offspring had excess fatty tissue, as compared to unexposed controls. Triflumizole also caused stem cells and pre-fat cells to develop into fat cells (Li et al. 2012).

Gestational diabetes

A study found that women who mixed or applied pesticides to crops or repaired pesticide application equipment during the first trimester of pregnancy had a higher risk of developing gestational diabetes. In the women who reported agricultural exposure during pregnancy, the risk of gestational diabetes was associated with the use of four herbicides (2,4,5-T; 2,4,5-TP; atrazine; butylate) and three insecticides (diazinon; phorate; carbofuran) (Saldana et al. 2007).

Type 1 diabetes and the immune system

Organophosphate pesticides have been found to be toxic to the immune system in animals and sometimes humans (Galloway and Handy 2003). Humans chronically exposed to chlorpyrifos have also been found to have increased levels of autoantibodies (Thrasher et al. 2002). A review on pesticides and immunotoxicity finds that there is some human and

animal evidence indicates that some pesticides can affect the immune system. This evidence, however, is too sparse to be conclusive (Corsini et al. 2013).

Pesticides are a food contaminant, as a result of their use in agriculture. Daily ingestion of low doses of diquat, an extensively used herbicide, induces intestinal inflammation in rats. The authors of this study suggest that repeated ingestion of small amounts of pesticides, as could be found in food, may have consequences for human health and may be involved in the development of gastrointestinal disorders (Anton et al. 2000).

Vacor

One chemical known to cause type 1 diabetes in humans is the now-banned rat poison Vacor. In the late 1970s, a few people tried to kill themselves by eating Vacor, and ended up with type 1 diabetes instead. Vacor destroys beta cells directly, but has also been found to be linked to type 1-related autoimmunity (Karam et al 1980).

The bottom line

There is evidence that various pesticides may contribute to the development of type 2 and perhaps even gestational diabetes, especially at higher levels of exposure (e.g., among farmworkers). Exposures to pesticides have not been directly studied in relation to type 1 diabetes. Based on the above findings, it may be worth conducting appropriate studies on this possibility.

References

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A diet of organic food significantly lowers children's exposure to organophosphorous pesticides ([Lu et al. 2006](#)). Organic food does not always have to be expensive; I grew these strawberries without pesticides or herbicides in my garden. Every little bit may help.

<http://www.diabetesandenvironment.org/home/contam/pesticides>