Detection of Estrus in Intensively Kept Red Sokoto Goats 24 Hours Post Administration of Luchis Estrus Milk Leading To Estrus Synchronization

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ABSTRACT

An Experiment Was Carried Out To See If Luchis Estrus Milk; An Aqueous Extract From Peanuts Is Able To Synchronize Estrus In Intensively Kept Red Sokoto Goats. The Milk Was Prepared By Washing Known Quantity Of Peanuts, Sorting Out And Discarding Diseased Nuts, Drying In An Enclosure And Grinding. Then Known Quantity Of Water Is Used To Pour Into The Ground Peanuts, Stirred And Sieved. The Animals Were Brought From Plateau State Of Nigeria To Umudike In Abia State Of Nigeria. During The Course Of The Experiment; The Goats Were Fed With Panicum Maximum (Elephant Grass) And Fed Concentrate In The Following Order: Carbohydrate (Maize Offal) 60%, Protein (Soya) 30%, Fat (Palm Kernel Cake) 6%, Calcium (Bone Meal) 3% And Salt 1%. The Animals Whose Estrus Was To Be Synchronized Were Fasted For Twelve Hours. After Which 5ml/Kg Body Weight Of Luchis Estrus Milk Was Administered Per Os Using Automatic Syringe. The Animals Were Kept For One Hour Post Administration Of Luchis Estrus Milk Before They Were Allowed Their Daily Doses Of Concentrates. Then Forage Was Also Given Plus Water. After Twenty Four Hours; The Does Were Found To Be In Estrus And Were Bred Through Artificial Insemination Using Extended Fresh Semen. The Conception Rate Was Found To Be 80%

Key Words: Luchis Estrus Milk, Red Sokoto Goat, Estrous Synchronization, Conception.

INTRODUCTION

Generally, This Work Is Geared Towards Achieving Estrous Synchronization In West African Dwarf Ewes Using Luchis Estrus Milk; An Aqueous Extract From Peanuts.
The Study Had The Following Specific Objectives;
To Determine The Extent To Which *Luchis Estrus Milk* Which Contains Among Other Things L–3, 4 Dihydroxy Phenylalanine (L-Dopa) Is Effective In Synchronizing Estrus In Red Sokoto Goats.

To Determine The Concentration Of L–3, 4 Dihydroxy Phenylalanine Contained In *Valencia Variety Of Peanuts*.

An Animal Farmer Has Great Difficulty In Getting Expert Hands To Synchronize The Estrus In His Animals. This Is Because Veterinary Clinics Are Located In Major Cities In Nigeria. The Farmer May Need To Travel Five To Ten Kilometers Before He Can Access A Knowledgeable Veterinarian To Synchronize Estrus In His Animals.

Most Often, The Farmer May Not Have Enough Money For The Veterinarian’s Bill. Also, The Veterinarian May Not Have A Utility Vehicle (Uv) That Can Take Him To And Fro The Farm Due To The Deplorable State Of Nigerian Roads.

Often Combining Two Or Three Synthetic Pharmaceutical Hormones Administered At Different Days In One Estrus Period Is Used As An Effective Tool In Estrous Synchronization. Usually, One Hormone May Be Available While Others May Not Or All May Not Be Available.

Hence, Estrus Synchronization In Nigeria, So Far, Has Been A Thesis Affair In Higher Institutions Rather Than A Practical Innovation For The Farmers To Utilize.

Thus, There Is Need For A Less Cumbersome System To Be Instituted Which Will Take A Short Time To Achieve Estrous Synchronization.


1.1 Peanuts

*Arachis Hypogaea (Peanut)* Is A Species In The Legume Fabaceae Native To South America, Mexico And Central America (Seijo Et Al; 2008).

It Is World -Wide In Distribution.

Nutritional Value Of Peanuts; Valencia Raw Per 100g (35 Oz):
Energy 507kcal, Carbohydrates (21g), Sugars 0.00, Dietary Fiber 9g, Fat 48g Of Which Saturated Fat Is 7g, Monounsaturated Fat 24g, Polyunsaturated Fat Is 16g. It Has 25g Of Protein.
Vitamins Contents Of 100g Of Valencia Raw Include: Thiamin (Vit B₁) 0.6mg, Riboflavin (Vit B₂) 0.3mg, Niacin (Vit.B₃) 12.9mg, Pantothenic Acid (B₅) 1.8mg, Vitamin (B₆) 0.3mg, Folate Vit (B₉) 246μg. It Does Not Contain Vit. C. 100g Of Valencia Raw Also Contain The Following Minerals: Calcium 62mg, Iron 2 Mg, Magnesium 184 Mg, Phosphorus 332mg, Zinc 3.3mg (Wikipedia, 2009).

1.1.2 Peanuts And Antioxidants
Peanuts Contain High Concentrations Of Antioxidant Polyphenols, Primarily A Compound Called P – Coumaric Acid, And Roasting Can Increase Peanut’s P- Coumaric Acid Levels, Boosting Their Overall Antioxidant Content By As Much As 22% (Timothy Et Al, 2000).

1.1.3 Peanuts As A Source of Rasveratrol
Peanuts Are A Significant Source Of Rasveratrol, A Chemical Studied For Potential Anti – Aging Effects And Also Associated With Reduced Cardiovascular Disease And Reduced Cancer Risk (Wikipedia, 2010). It Has Recently Been Found That The Average Quantity Of Rasveratrol In One Ounce Of Commonly Eaten Peanuts Without The Skin (15 Whole Peanut Kernels) Is 73μg (Timothy Et Al; 2000). This Means That Ounce For Ounce; Peanuts Contain Almost 30 Times As Much Rasveratrol As Grapes, Which Often Are Touted As Being One Of The Few Good Sources Of The Antioxidant. Peanuts Also Help To Accelerate The Growth Of Male And Female Hormones (Wikipedia, 2010).

1.2 Estrus Synchronization
Estrus Synchronization Is A Practice Whereby Majority Or All The Breeding Females, Are Made To Come To Heat At A Set Time And Bred Accordingly In Order To Have Uniform Calving Time (Cows) Lambing Or Kidding Time (Sheep And Goats). Estrus Synchronization In Livestock Focuses On The Manipulation Of Either The Luteal Or The Follicular Phase Of The Estrus Cycle. In Does And Ewes, The Opportunity For Control Is Greater During The Luteal Phase, Which Is Of Longer Duration And More Responsive To Manipulations (Wildeus, 2009).
Prolactin Secreted By The Anterior Pituitary Helps In Onset Of Lactation And Also Helps The Corpus Luteum To Function In Some Species (Freeman Et Al; 2000: Thompson, 2004). Prolactin Is Luteotropic In Mammals
(Ganong, 1993). The Basal Serum Prolactin Concentration Is Increased By Increased Duration Of Daylight (Photoperiod) With Normal Secretion During Late Spring And Early Summer (Niswender Et Al; 1994)
The Primary Mechanism By Which Dopamine Suppresses Prolactin Releasing Lactotroph Gene Expression Is By Reducing Intracellular Cyclic Adenosine Monophosphate (Camp) Levels (Hnasko Et Al; 2006)

1.3 Estrus In Domestic Animals
Estrus Is The Period When There Is Full Surge Of Almost All Reproductive Hormones In An Animal’s Body Leading To Maturation And Ripening Of The Ovarian Follicle To Release The Ovum. It Is A Period Of Sexual Receptivity By The Female. Estrous Cycle Is The Period From The Onset Of Estrus Until Estrus Occurs Again (Thompson, 2004). There Are Substantial Differences Among Domestic Species In The Occurrence Of, Control Of, And Events Within The Estrous Cycle.
In All Species Of Animals, Estradiol From Ripe Ovarian Follicle Induces Estrus (Thompson, 2004). Factors That Affect Estrous Cycle In Domestic Animals Include: Follicular Waves, Seasons, Nutrition, Social And Stress Factors And Temperature And Humidity

2. MATERIALS AND METHODS

2.1 Nutritional Evaluation Of Peanuts For L-Dopa Content
Extraction Of L – 3, 4, Dihydroxy Phenyl Alanine (L-Dopa) From Peanuts.
The Cells Of Raw Valencia Variety Of Peanuts Were Ground With A Blender. 10 Mg Was Weighed; Then The Ground Cells Was Mixed With 2ml Of 0.1n Hcl In A Test Tube. The Mixtures Was Heated In A Boiling Water Bath For 5 Minutes And Cooled. Equal Volumes Of Ethanol (2ml) Was Added In A Test Tube And The Mixture Shaken For Ten Minutes. The Mixtures Was Centrifuged At 2000 Rpm For 10 Minutes And The Supernatant Retained (Daxembichler Et Al 1971).

2.1.1. Qualitative Analysis Of L-Dopa In The Arachis Hypogaea (Peanuts)
Qualitative Estimation Of The L – Dopa Concentration Of The Supernatants Was Made By Measuring The Ultra Violet (Uv) Absorption At 283nm In A Standard Ultraviolet (Uv) Spectrophotometer After Correction For Background Absorption. A Control Was Compounded By Mixing 2ml Of 0.1n Hcl Plus 2ml Of Ethanol (Daxembichler Et Al; 1971). Also, An L-Dopa Standard (Source: Canada Via Prof Ukachukwu, S.N. M.O.U.A.U.) Was Prepared At 100ppm And 2mls Of The Standard Was Also Measured At 283nm Absorption.
The Result Obtained Showed That 10mg Of Valencia Variety Of Peanuts Has 0.196 Absorption While The Standard Has 0.172 Absorption And The Control Had 0.048. There Is No Significant Difference Between L-Dopa Standard And The Extract From Valencia Variety Of Peanut (P≥ 0.1). This Shows That Valencia Variety Of Peanuts Has Very High Quantity Of L-Dopa Content

2.2 Preparation Of Luchis Estrus Milk


2.2.1 Experimentation

Luchis Estrus Milk Was Administered To Ten Red Sokoto Does First Thing In The Morning At A Minimum Dose Of 5ml Per Kg Body Weight. One Doe Was Left As Control. The Ten Does Treated Were Left For One Hour For The Drug To Act. Then, Their Daily Ration Of Concentrates Was Given Them And Water Was Also Provided For Them. Later Their Daily Ration Of Forage Was Given Them Also.

3. RESULT

The Next Day Which Corresponds To Twenty Four Hours Post Administration Of Luchis Estrus Milk, The Ten Does Treated Came To Estrus. The Signs Of Estrus Observed Were: A Little Restlessness And Dilation Of The Vulva With Little Mucous Discharge. Nine Of Them Were Bred Through Artificial Insemination Using Freshly Prepared And Extended Semen. The Conception Rate Was Found To Be Greater Than 80%.

Luchis Estrus Milk; An Extract From Peanuts Which Contains: Aqua, Carbohydrates, Fats, Proteins, Vitamins: B₁, B₂, B₃, B₅, B₆, B₉, Calcium, Magnesium, Phosphorus, Zinc, Fiber, Rasveratrol, Iron Plus L-Dopa As The Major Active Ingredient For Estrous Synchronization; Have Been Found To
Synchronize Estrus In Red Sokoto Does Within 24 Hours Post Administration As Against 9-14 Days Which Is The Minimum Period Any Single Pharmaceutics Can Synchronize Estrus (Bowen, 2003).


4. CONCLUSION

Luchis Estrus Milk Seems To Be A Better Alternative To Pharmaceutics For Estrous Synchronization. Luchis Estrus Milk Is An Organic Substance. It’s High And Tolerable L-Dopa Content Plus All The Vitamins, Protein, And Fats, Including Its Mineral Content Makes It Food As Well As Drug. That Could Be The Reason For Quick Luteolysis In The Animals And Ovulation Which Enables The Animals To Conceive.

Luchis Estrus Milk Is Safe And Can Be Consumed By Both Animals And Man. Therefore, It Is Suggested That Some Humans Challenged With Hyperprolactinemia Induced Infertility And Parkinson Disease Could Try Using Luchis Estrus Milk Since It Contains L-Dopa In High And Tolerable Dose. Dopamine Is The Only Well Established Antagonist To Prolactin. The L-Dopa Content Of Luchis Estrus Milk Undergoes Quick Decarboxylation Producing Dopaminemia Which Antagonizes The Prolactin Which Maintains The Corpus Luteum Leading To Luteolysis And Ovulation.

It Is Suggested That Researchers Do More Work With Luchis Estrus Milk In Not Only Small Ruminants, But Also In Other Species To Substantiate Its Efficacy In Other Species.

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6. REFERENCES


